Higher Pay, Worse Outcomes? The Impact of Mayoral Wages on Local Government Quality in Peru

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Abstract

In this paper, I study how wages earned by local politicians affect local government quality. I construct a novel data set on Peruvian municipalities which includes individual level data on the characteristics of local authorities, candidates and top bureaucrats, as well as detailed information on local government performance, bureaucratic structures and local politics. To identify the effects, I use caps imposed by the Peruvian central government on the wages earned by local mayors as an excluded instrument. The results indicate that mayoral wages do not improve local government quality. I find evidence of a robust, negative impact on public investment performance. Moreover, I find no evidence of a positive effect on politician and bureaucrat selection and on political effort. I consider multiple explanations for the performance result and conclude that this can be attributed, in part, to greater political opposition and fragmentation. Wages strongly affect the local political landscape, leading to more political opposition and fragmentation. These latter factors are shown to be detrimental for local government performance.

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"Jurais por Dios y por la plata...?" [Do you swear for God and for the money...?][a]

[a]The Mayor of the Peruvian municipality of Chota confuses the word "patria" (country) with "plata" (money) while taking the oath of office of his council members. ("Alcalde de Chota tomo juramento a regidor "'por Dios y por la plata"." El Comercio (Lima, Peru) 01 Jan 2011. Print.)

1 Introduction

In recent decades, political and fiscal decentralization has been a common phenomenon in the developing world (Bardhan and Mookherjee, 2006). However, in many cases, these reforms have not been accompanied by policies aimed at strengthening the capacity of local governments. This has led to poor performance (Bardhan, 2002; Jütting et al., 2004; Bahl and Martinez-Vazquez, 2013; Sow and Razafimahefa, 2015). In particular, local governments have failed to adequately deliver public services and infrastructure (Ahmad et al., 2005; Finot, 2001).[1] This context of increased political and economic importance of local governments and poor performance raises the question of how to reinforce their capacities and improve overall government quality.

This paper studies how wages earned by full-time local executive politicians affect local government quality in a developing country context. The theoretical literature on this effect (Besley, 2004; Caselli and Morelli, 2004; Messner and Polborn, 2004; Mattozzi and Merlo, 2008; Gagliarducci et al., 2010) is not conclusive and points to it being context-specific. [2] Extending the empirical analysis to different types of authorities and institutional frameworks can provide clarification. Using a novel database on Peruvian municipalities, I show how mayoral wages affect a broad set of measures of municipal government quality. I find evidence that wages have a negative effect on government performance. Moreover, these are found to cause significant changes in the local political landscape. In particular, higher wages lead to increases in political participation, opposition and fragmentation. I provide evidence that these changes drive a significant part of the performance results.

To obtain identification, I use the caps imposed by the Peruvian central governments on the wages earned by local mayors. This wage reform, introduced in 2007, divided local governments into 20 categories based on their electoral population. For each, it established a maximum wage the local

[1]Problems with public investment implementation are not limited to local governments. In a recent study, OECD (2013) showed that, in an extensive sample of low-income countries, 30% of countries in Africa and 25% of countries in Central America and the Caribbean have public investment execution rates of 80% or less.

[2]For example, Besley (2004) argues that higher wages imply that politicians will have a greater incentive to get reelected, which means that they pander more to voter's preferences. On the other hand, Mattozzi and Merlo (2008) show that increasing wages of politicians while in office can reduce the average quality of individuals who decide to engage in politics. In a setting where market abilities are correlated with political skills, the result follows from the fact that low quality individuals, who gain less from revealing their political skills, now face a lower opportunity cost of becoming politicians.

mayor could earn. Using these caps as an excluded instrument for mayoral wages, identification is obtained from the fact that wage limits are a step function of the electoral population. As long as other variables that affect outcomes vary smoothly, the estimates should only capture the direct impact of mayoral wages. Peru also offers appealing and unique sources of information from which I have constructed a novel database. The data includes detailed information on performance drawn from disaggregated municipal accounts and the achievement of performance goals set by the central government. It also incorporates individual level data on the characteristics of elected mayors, candidates running for local office and top municipal bureaucrats. This has been drawn from new sources like the 2014 Census of Regional and Local Governments and the curricula vitae submitted by local candidates. Finally, the database comprises information on the local political and institutional landscape, including electoral results, characteristics of local recall voting processes and corruption cases filed against local authorities.

The key finding of this study is that higher wages do not improve the quality of local governments. In fact, there is evidence that wages can have a negative effect on selection and performance. Regarding the effect on selection, I find that a 20% increase in wages decreases the probability that the mayor has tertiary education by 8.6%. These also produce a negative effect on private management experience. In addition, there is no evidence that wages increase public management experience. With respect to the candidate pool, there is no evidence that wages affect the fraction of candidates with tertiary studies, the number of years of study or work experience. However, the results show a negative impact on the fraction of candidates that have had a political party job. The fact that there is a negative mayoral selection effect but no significant effects on the candidate pool point to wages having a negative impact on support for educated candidates. In particular, higher wages appear to be detrimental for candidates with tertiary education as their voting share decreases significantly.

It is possible that changes in politician selection affect the municipal bureaucratic body. However, I find no evidence that mayoral wages improve the selection of bureaucrats and overall municipal bureaucratic capacity. If there is an effect, the results indicate that higher wages are linked to municipalities requesting technical assistance and personnel training in more municipal tasks, including public investment execution. The analysis shows that higher-paid mayors need not be able to attract better bureaucrats. In particular, I find that there are no significant impacts on the education and tenure levels of public investment managers.

Regarding government performance, the results show that higher wages can lead to worse out-

comes. I find evidence of a robust negative effect on public investment performance. This impact is quite significant. A one standard deviation increase in wages leads to a decrease of 0.52 standard deviations in public investment execution rates. This effect appears not to be driven by better paid mayors investing in projects of better quality. Moreover, there is no evidence that the result is driven by greater accountability on the part of higher-paid mayors. In fact, there is no effect on both the extensive and intensive margins of mayoral corruption cases. The negative impact on performance is not limited to public investment. Higher wages also have a negative effect on the fraction and value of performance goals achieved by the municipality as part of a central government plan of performance-linked transfers. In addition, I do not find evidence of a positive impact on political output, measured by the production of local decrees. Hence, it cannot be concluded that wages increase exertion of political effort.

Negative selection effects do not appear to explain a significant fraction of the performance results. Therefore, to account for the change in performance, I propose a novel mechanism. This is based on the effect of wages on the local political landscape and befits the present context. Increased electoral competition can be a driver for better government (De Janvry et al., 2012). However, it can potentially have harmful consequences (Lizzeri and Persico, 2005). More political opposition and fragmentation can lead to more obstacles for the governing authority in terms of implementing his agenda. Loayza et al. (2014) shows that this is the case for Peru. Moreover, more opposition can lead to greater turnover of authorities. Increased turnover among politicians, and among bureaucrats who work with them, can lead to more inexperienced authorities and be detrimental for performance. Again, there is evidence that is the case in developing countries (Nath, 2014; Aragón and Pique, 2015[3]).

I find that wages have a significant, robust effect on political factors. Higher wages increase the number of candidates running for office, lower the support for the elected mayor and lead to greater vote split. In particular, a one standard deviation increase in wages leads to a drop of 8.2% in the winner's vote share and a 0.85 standard deviation change in the Herfindahl-Hirschman Index (HHI) of political concentration. Hence, higher wages lead to more political participation, opposition and fragmentation. The change in the political landscape appears to extend beyond electoral outcomes. The results show that political opposition continues throughout the mayor's term as better-paid

[3]Using data from Peruvian municipalities, Aragón and Pique (2015) show that, while re-elected authorities have few effect on local outcomes, re-elected authorities lead to higher execution rates in the 2011-2014 electoral period. Moreover, reelection is also linked to lower requirements for technical assistance and training, which serve as a proxy for government capacity.

mayors face a higher probability of being recalled before their term ends.

Using estimates from Loayza et al. (2014) and Aragón and Pique (2015), I show that increases in political opposition and mayoral turnover can account for between 25% and 40% of the impact on wages on performance. This percentage grows to 45% if one considers the effect on mayoral turnover through recall voting. In addition, the explanatory power of political variables appears to be significantly higher than that of other relevant factors like politician and bureaucrat selection. The results support the hypothesis that the institutional and political setting in developing countries can lead to wages having a strong effect on political opposition and fragmentation and to the appearance of this political economy mechanism. While this transmission channel is novel, it is in line with recent literature on the perverse effects of electoral competition in matters of public investment performance.[4]

This study's results complement those from previous research on the role of monetary incentives on politician selection and behavior. The empirical literature on this matter has focused on legislators' performance (Ferraz and Finan, 2011b, Fisman et al., 2015, Braendle, 2015). These have provided mixed evidence both in terms of selection and performance. Ferraz and Finan (2011b) study how salaries paid to local legislators in Brazil affect legislative effort and political entry using a similar approach as the one used in this paper. They find a positive effect on political effort and a slight, positive impact on the competence of politicians. Fisman et al. (2015) and Braendle (2015) take advantage of a reform that equalized the wages of Members of the European Parliament to identify the effects on legislator entry and behavior. Fisman et al. (2015) find that higher wages increase the willingness to remain in office and therefore, average tenure. However, these lead to a decrease in the average quality of the elected legislator and produce no effect on performance. On the other hand, Braendle (2015) finds a positive effect on legislative effort.

Less is known for the case of politicians at the executive level. These are ultimately responsible for achieving policy outcomes and, therefore, have different responsibilities (and motivations for running for office) compared to legislators. The only evidence on executive politicians is provided by Gagliarducci and Nannicini (2013). Using a RD approach, the authors analyze the effect of wages on politician selection, local fiscal policy and administrative performance for a subset of Italian mayors, who can be either part-time or full-time authorities. They find evidence of a negative impact of wages on the size of municipal governments and red-tape, a result that is driven by the

[4]For example, Nath (2014) shows that politicians' reelection probabilities can alter the types of contracts offered to bureaucrats, which in turn affects their performance.

greater quality of elected mayors.

The present paper complements the above literature by studying a complete set of full-time executive politicians[5] in a developing country setting. The stark differences between the present context and that studied by Gagliarducci and Nannicini (2013) means that wages can have different impacts on similar outcomes, which in fact is the case. Moreover, these can be attributed to different mechanisms. A distinct setting also allows for exploring the impact on outcomes of greater relevance for developing countries. In particular, this paper provides detailed evidence on public investment capacity and performance.[6] Moreover, by using an instrumental variable approach similar to that in Ferraz and Finan (2011b), I can extend the validity of the results to the entire sample. Finally, the depth of the data allows for the identification of impacts on a broad set of outcomes, which includes previously unstudied dimensions of local government quality. In particular, this is the first time that the effect on the political landscape and its connection to performance has been analyzed to such depth.

This paper also contributes to two other strands of the literature. First, it complements the literature on the role of monetary incentives on the public and social sectors (Dal Bó et al., 2013, Ashraf et al., 2014, Deserranno, 2014). Dal Bó et al. (2013) use experimental evidence from a federal drive to recruit new bureaucrats for a selected group of Mexican municipalities. The authors show that higher wages attract smarter candidates without sacrificing public service motivation. These results are supported by the conclusions drawn by Ashraf et al. (2014). Using experimental evidence related to health worker positions in Zambia, the authors find evidence that making career incentives more visible for public health jobs helps attract better applicants without affecting their pro-social characteristics. However, a recent paper by Deserranno (2014) casts doubt on the hypothesis that greater incentives attract more qualified candidates without affecting their eagerness to work in the social sector. This paper's contribution to the above literature is centered on identifying the effect of politicians' wages on bureaucrat selection and local bureaucratic capacity. While I do not explore the role of bureaucrats' wages, I show that there is no evidence to support the claim that better-paid mayors are able to attract better bureaucrats.

Finally, the paper contributes to the literature on the effects of political competition and fragmentation on policy outcomes (Keefer and Khemani, 2009, Besley et al., 2010, Ferraz and Finan,

[5] Gagliarducci et al. (2010) show that whether the political job involves complete or partial dedication can influence both the type of candidates running for office and the behavior of elected officials.

[6] As aforementioned, project implementation tends to be the most challenging aspect of public administration in several developing countries

2011a, Martinez-Bravo et al., 2014). In particular, this paper complements findings on the importance of political factors on public investment performance (Loayza et al., 2014, Aragón and Pique, 2015, Vasquez, 2015) by establishing a connection between wages, political fragmentation and performance. Moreover, the results complement Nath (2014) findings on how electoral incentives can alter bureaucratic performance in public investment matters.

The rest of the paper is structured in the following manner. In the next section, I provide an overview of the the Peruvian context. Section 3 presents the characteristics and sources of the data, details the identification strategy and the results regarding instrument validity. Section 4 shows the results for politician and bureaucrat selection, while Section 5 presents the impacts on performance. Section 6 presents evidence on the political economy mechanism that can explain the performance results. Finally, Section 7 includes the concluding remarks.

2 The Peruvian Context

2.1 Local Governments

Since 2002, Peru has been divided into 25 regions and the Province of Lima, which encompasses the capital and largest city of Lima. Regions are subdivided into provinces and these into districts, with one of these being the capital district of the province. By the end of 2014, there were 195 provinces and 1851 districts. Figure 1 illustrates the geopolitical division of the country and the electoral population of each district.

Each region has its own government which is headed by a regional president. Each province and district is governed by a municipality. Provincial capital districts are administered by their respective provincial municipality. Municipal government is divided into two bodies: the mayoral office and the municipal council. The mayor is the head of the former and is the supreme administrative authority. The 2003 Organic Law of Municipalities ("Ley Organica de Municipalidades" - LOM) establishes the mayor's main responsibilities. This include the design and implementation of the municipal budget, the implementation of the municipal development plans and the proposal of local municipal laws ("ordenanzas"). Moreover, in conjunction with the central government, the mayor's office is responsible for the construction of basic infrastructure. This includes roads, schools, health facilities, water and sewage networks, irrigation channels, among others. The mayor is elected for a four-year term. Until 2015, he could be reelected indefinitely.[7] However, mayors can be recalled

[7] In March 2015, the Peruvian Congress approved a law forbidding the immediate reelection of regional presidents,

during their second and third year in office. That is, citizens can organize a referendum on whether the mayor and council members remain in office. This mechanism is used extensively across the country and has been linked to greater political instability. This will be discussed in Section 6.

The municipal council constitutes the legislative body of the municipality. It is made up of the mayor and council members known as "regidores". The role of council members is secondary and these remain relatively unknown to the public.[8] However, opposition members can create obstacles for the mayor's government. According to the LOM, council members can present amendments to the budget and local laws. "Regidores" are elected indirectly via the vote share their party's mayoral candidate received.[9] To avoid excessive political confrontation, the winner party receives a majority in the council. The rest of the seats are assigned proportionally among opposition parties.[10]

Throughout most of the country's history, local governments have had a secondary role in the country's development. Municipalities were mainly concerned with the implementation of small public works[11] and managing the local business environment.[12] In 2002, the centralized structure was altered due to changes introduced by the Framework Law of Decentralization. The law established the basic steps for the decentralization process. Later, the LOM placed municipalities as the main drivers of local development. It granted them greater powers in terms of local public investment and management of local public services. Other decrees, including the Law of the Accreditation System for Regional Governments, gave the necessary framework for the transfer of central government responsibilities in education, health and poverty-relief programs.

Municipalities also experienced significant growth in their budgets. In most cases, this was largely driven by an increase in central government transfers. For most local governments, the main transfer scheme is the Municipal Compensation Fund (FONCOMUN). This fund redistributes a fraction of sales tax revenues to municipal governments based on clearly defined formulas set by MEF. FONCOMUN transfers surged due to increased growth rates. Municipalities also benefited from the redistribution of the mining corporate tax or "mining canon". The "canon" is equivalent to 50% of tax revenues from mining companies operating in the country. The magnitude of the

and provincial and district mayors. This law applies to all authorities elected in the 2014 local elections.

[8] Campaign advertisement only shows the name and face of the mayor and most voters tend to be unaware of who are the candidates for "regidores".

[9] In local elections voters can only cast a ballot for one party list. This includes both a candidate for mayor and candidates for the council. Hence, the election is reduced to a vote on mayoral candidates.

[10] As most local councils are made up of five members, there tends to be only one other party represented in the council.

[11] These include the construction and maintenance of minor road networks and public spaces.

[12] Given the rapid development of the country, this issue has become more important in recent years. However, this is only a concern in main urban areas which have experienced a significant increase in commercial activities.

fiscal decentralization process was staggering. Since 2002, the municipal budgets increased by 500% at an average annual rate of more than 15%. Municipalities now represent more than 20% of the national budget, more than double their participation in 2002. Moreover, given that "canon" transfers are earmarked for public investment, local governments now account for 45% the country's public investment budget.

While more resources were granted, the central government placed strong restrictions on municipal fiscal capacity. Peru learned from previous experiences in the region where decentralization led to overspending and high debt burdens. Municipalities have limited capacity to levy taxes and incur in debt. The central government is solely responsible for collecting income and sales tax. Municipalities can collect property taxes but cannot alter the tax rate. Moreover, regulations were introduced to avoid inefficient use of resources. In 2000, the central government established the National System of Public Investments (SNIP). This is a set of instructions regarding the design and implementation of public investment projects.[13] Other laws related to the public investment process were also instated.[14] However, there were few efforts to strengthen the quality of local politicians and bureaucrats.

Lack of capacity, strict budget constraints and the expansion of resources and responsibilities led to problems in performance. In particular, municipalities failed in the implementation of their public investment budgets. By 2007, municipalities were only implementing around 65% of their budgets. Low execution rates were a widespread phenomenon. This was not limited to municipalities with significant "canon" resources. From that time, capital expenditures execution rates have increased to a level slightly above 70%. This reflects that municipalities have adapted, in part, to managing bigger budgets. Moreover, there has been learning within and across government cycles (Aragón and Pique, 2015, Vasquez, 2015). However, failure to obtain larger increases reflects that lack of local government quality remains a serious problem (Ponce and McClintock, 2014).

The above context is well suited for the research question at hand. Lack of capacity and performance, particularly in matters of public investment, characterizes several developing countries. Moreover, given the high social opportunity cost of idle resources[15], poor public investment per-

[13]Projects must have a feasibility study. This has to be approved before the projects are included in the budget. Moreover, all projects must have a technical dossier with detailed information on costs and timing before being implemented.

[14]For example, a series of regulations were introduced regarding the public procurement process for public investment projects.

[15]Peru has a massive infrastructure gap. For the 2012-2021 period, the Peruvian Association for Fomenting National Investment (AFIN) estimated it to be around US$ 90 billion, almost half the country's GDP. Moreover, despite the implementation of social transfer programs, the poverty rate still stands at around 24%, with rural poverty close to 50%. Opportunity costs are also high due to the risk of social instability that arises from spent resources (Vasquez,

formance is a key issue in public debate. In addition, the institutional and political background is similar to that of other Latin American countries. Peruvian local governments have been accused of low accountability. Numerous corruption complaints have been filed against their authorities.[16] Moreover, the country has a weak party system and local politics are now dominated by regional and local movements.[17] Hence, political entry is relatively cheap, party selection filters are weak and local political landscapes tend to be quite malleable.

2.2 2007 Local Authorities' Wage Reform

Before 2007, mayors and council members had ample freedom in setting their wages. The LOM stated that the mayor's monthly wage was to be "set in a discretionary manner according to the real and tangible economic capacity of the local government." Wages were set by the council in the first quarter of the mayor's term. The LOM did not place any particular restrictions on the monthly amount that council members could receive via diets, except that these were also fixed by the council itself and, following previous laws, could not be higher than the mayor's monthly wage.

In 2007, the central government started a series of reforms aimed at reducing public expenditure. Part of these were focused at limiting public wages.[18] The Supreme Decree 025-2007 enforced caps on the monthly wages of local mayors and, indirectly on council members. The caps were introduced amid a concern that incoming mayors would capture central government transfers and use them to increase local public wages. The timing of the decree in the context of local electoral cycles is shown in Figure 2. The decree divided municipalities into 20 categories based on the electoral population of municipality's jurisdiction. [19] For each category, there is a maximum wage the mayor can earn. The cap is defined in terms of the Income Unit of the Public Sector (UISP).[20] The decree gave special wage bonuses for municipalities that govern over regional and provincial capitals and districts in the Lima/Callao metropolitan area.[21] The bonus was justified based on the

2015.

[16]The Anti-Corruption Office has registered more than 3000 corruption complaints against current and former mayors (2007-2014).

[17]In the 2010 local elections, national parties' candidates accounted for less than 50% of the total number of candidates. Moreover, they only won around 35% of district municipalities.

[18]Some efforts to restructure public wages had started under the previous administration. In 2004, the government introduced a law which stated that local mayoral wages should depend on the electoral population without establishing specific limits.

[19]The electoral population is defined as those citizens registered in the electoral roll. In Peru, voting is mandatory. Hence, all citizens over 18 that possess a National Identity Document are included in the electoral roll.

[20]The UISP currently stands at S/. 2600 (US$ 900 approximately) and has not been changed since it was first introduced in 2005.

[21]Mayors of municipalities whose jurisdiction included the regional capital were allowed to earn an additional 60% of their corresponding wage, up to 1 UISP. Mayors of provincial capitals and districts in the Lima/Callao area had

greater economic and political power and higher workload that these municipalities have. The wage categories and their wage caps are shown in Table 1. It also shows the distribution of municipalities across these categories. From this, it is clear that most are relatively small in terms of electoral population. In fact, if provincial and Lima/Callao municipalities are excluded, all are located in the last 13 categories. Moreover, more than half of them are located in three categories (XV, XVI and XVII), whose electoral population ranges from 1 to 5 thousands.

The wage reform indirectly limited the allowances for local council members. "Regidores" are paid an allowance for each council session they assist. The decree established that the monthly amount earned by council members (that is, the allowance times the number of sessions held each month) could not be higher than 30% of the mayor's wage. Moreover, the reform does not contravene the previous norm that the mayor is the highest paid authority in each municipality. Hence, in an indirect manner, it also caps the wages of other local public public officials.

Naturally, the wage reform was opposed by several local authorities.[22] Most complaints had to do with the low wage caps. This complaint does not appear to be justified by the data. Table 2 shows the average wage cap and the average monthly salary income for workers from different sectors, occupations and education levels. The gross average wage cap for district municipalities (excluding Lima and Callao) is comparable with the monthly salary income of professionals and managers. It is also similar to that of workers with university studies. Moreover, it is higher than the average public sector salary income. Hence, the average cap is not overly restrictive. It should be noted that the mayors' concern was not purely selfish. As aforementioned, the mayor's wage establishes a cap over all other municipal wages. Hence, low mayoral wages can hinder the hiring of good public managers. Recently, there has been efforts by mayors to try to increase the caps. In July 2015, the Association of Municipalities presented a reform to modify limits for the last three wage categories, which correspond to the smallest municipalities.

There were also other concerns raised by mayors. Since limits were based only on the electoral population, these were considered "nontechnical". It was argued that overall population can differ significantly from electoral population. Hence, the wage would not correspond to the amount of work needed. Moreover, as municipalities receive significant central government transfers that are not necessarily linked to population, wages could bare little relation to budget size. For example, the mayor of the district of Echarate in the region of Cusco had to manage a budget of nearly

their caps increased by 30%, up to 0.5 UISPs. In addition, the mayor of the Province of Lima, which encompasses the metropolitan area of the capital city, has a specific limit equal to 5.5 UISPs.

[22] "Varayoc de Doble Filo." CARETAS Magazine April 4th 2007. Print Edition.

US$ 30 million[23] and earned a wage of US$ 1300, while the mayor of the La Molina district in Lima, where the budget is around 60% that of Echarate, would earn twice as much. Finally, some mayors also disliked what they perceived as central government intrusion in local administration. The LOM guaranteed certain roles for the local council, included that of fixing local wages. Hence, local authorities' argued that the decree violated their autonomy.

In general, the reform is simple as the limits are transparent and easy to calculate. [24] Moreover, the reform does not allow for increases in wages during the electoral cycle. This is in accordance with central government budget laws which prohibit increases in public wages. According to the Association of Municipalities, this prohibition does not hold across cycles. Hence, wages may increase if, for example, the municipality changed from one wage category to another. This view is in accordance to what is stated in the LOM, which suggests that wages and council member allowances are only valid for the four-year electoral period. This apparent discrepancy between the LOM and the budget laws is not a concern for municipalities which remain in the same category. Moreover, out of those which changed categories, more than half adjusted their wages upwards.

3 Data, Methodology and First Stage Results

3.1 Data

This study uses a novel database that compiles information on several dimensions of government capacity and performance. The broad range of the analyses meant the collection and processing of data from new sources provided by various Peruvian government agencies. The database includes individual-level data on elected mayors, mayoral candidates, and municipal investment managers, as well as detailed information on municipal accounts, performance indicators, political participation, and electoral results.

First, data on mayoral wages comes from municipal monthly expenditures at the account level. This information is registered as part of the Financial Administration Integrated System (SIAF) managed by the Ministry of Economics and Finances (MEF). While this is publicly available, the query system makes the collection process burdensome. Hence, officials at MEF provided the

[23] Product of high "mining canon" transfers.

[24] Initially, it was not specific regarding the relevant electoral population for a provincial municipality. In particular, it did not clarify whether that number is the one that corresponds to its capital district or to the entire province. Nonetheless, when published, the decree was accompanied by a supplement which did provide clarifying information. It showed that the relevant electoral population for a provincial municipality is that of its capital district. However, this is not a concern for the present study as I exclude provincial municipalities from my sample.

information from 2009 onward, the period for which monthly wage information is available. To check its accuracy, I contrast this data with that from annual municipal public accounts. This data, which is reviewed by MEF at the end of the year, includes information on annual budgeted and actual expenditures at the account level. It is not publicly available and was provided on request by MEF's General Directorate of Public Accounting for the 2002-2014 period.[25] No mayor differences were found between budgeted annual wage expenditures and SIAF monthly expenditures. Hence, I use the mode monthly wage as the relevant mayoral wage. That is, the one the mayor is expected to earn throughout his term.[26] I performed a second check on wage data using information from politicians' income declarations registered at the National Accountability Office. No major differences were detected between the two sources.[27] Hence, it can be concluded that wage data is accurate and reliable.

To study politician selection, I have collected information from two novel data sources. The first is the curricula vitae that mayoral and local council candidates have to present to the National Jury of Elections (JNE) before a local election. Candidates are required by law to report their personal details, as well as information on their education and work experience. They can also report their income and assets. The submitted curriculum vitae is equivalent to a sworn declaration. Hence, candidates who report erroneous information can be excluded from the electoral contest. Even though information is registered in a standard format, candidate data is not systematized. Hence, the information was collected by scraping it from each curricula. This was done for the more than 88,000 and 110,000 candidates that run in the 2010 and 2014 Regional and Local Elections, respectively. The scraping process revealed that, in 2010, more than 96% of mayoral candidates reported information on their education history. The response rate for work experience is lower though it is still above 80%. While the no response might reduce the precision of the estimates, it should be noted that it is not correlated to wage caps. Hence, there should be no bias in the results.

I complement the above information with data from the 2014 National Census of Regional and Local Governments (CENEGREL). The CENEGREL was requested by MEF. Its purpose was to evaluate local public investment capacity and performance. This census is the first of its type to be

[25]It should be noted that, before 2009, there is a small subset of municipalities for which the information is not available. In 2009, MEF restructured its public accounts system, rendering it more reliable and offering more detailed information.

[26]The benefit of using the mode is that it disregards months when the mayor gets a wage deduction due to, for example, an unpaid leave. The results are consistent with the use of alternative measures such as average and median budgeted wages and average and median actual expenditures on wages.

[27]The few cases with discrepancies had to do with municipalities not adjusting their wages until the second year of the mayor's term.

carried out in Peru. To the best of my knowledge, this is the first time MEF has granted outside access to this data. Among the information collected, one can find information on education and work experience for each mayor at the time of the census. In particular, one can obtain the years of experience in public and private management.[28] The work experience data is particularly useful as it does not have a problem of no response. Moreover, experience in public and private management should be a better indicator of administrative skills than overall work experience.

I also use the CENEGREL to analyze bureaucrat selection. Given its purpose, the census also collects information on characteristics of all municipal public investment workers. According to SNIP guidelines, all municipalities must have a public investment execution unit. Moreover, SNIP affiliated municipalities must have a separate formulation unit and, in most cases, an evaluation unit. The CENEGREL includes information for the three units. In particular, it provides data on the education level and tenure of each unit manager.

For the analysis on municipal bureaucratic capacity, I use information from the National Registry of Municipalities (RENAMU). This municipal survey, carried out annually since 2004, provides detailed information on economic, social and political variables at the local level. While the data is self-reported by local authorities, any misreporting is treated as a civil offense. The survey is particularly useful for this analysis. Municipalities have to report whether they require technical assistance and personnel training for a set of municipal tasks.[29] Based on this information, I construct an assistance and a training needs index. These are given by the fraction of tasks for which the municipality requires assistance and training, respectively. An overall measure of technical needs is constructed by averaging the above indicators. I also calculate an index of core technical needs. This is constructed in the same manner except that it only considers key municipal tasks. These include strategic planning, municipal management, formulation and execution of public investment projects and civil defense. The use of this indicators is not new. Aragón and Pique (2015) utilize them to measure the impact of mayoral incumbency on local government capacity.

It can be argued that the aforementioned indexes confound bureaucratic capacity with mayoral skills. Nonetheless, the inclusion of personnel training needs point to it being a good measure for the skills of bureaucrats. To address the above concern, I use an alternative indicator based on the management instruments that the municipality has at its disposal.[30] The index is the number of

[28] It also includes peculiar data such as the mayor's knowledge on guidelines to carry out investment projects.

[29] In 2011, RENAMU asked municipalities to report their assistance and training needs in 14 and 16 tasks, respectively. In 2012, the number of tasks changed to 23 and 20, respectively.

[30] Municipalities can develop a series of standard instruments and plans to guide their efforts. Among the most common are the operations plan, urban and rural development plans and participatory budget.

instruments expressed as a fraction of the 19 for which RENAMU asks information for. A similar indicator has been used by Vasquez (2015). The author shows that this has a positive impact on public investment performance.

Most of the analysis on performance is based on information provided by various directorates at MEF. In particular, I make use of the complete set of annual municipal accounts. The data includes budgeted and actual expenditures disaggregated at account and source of funding level. This allows for the calculation of public investment execution rates, which is this study's preferred performance indicator. Moreover, specific information on public investment accounts was provided upon request by MEF's Directorate of Public Investment. This information includes budgeted and actual expenditures by function or sector of the economy. This disaggregation is important in order to check expenditures which are categorized as "strategic" and/or "competitive". This categorization is used by MEF to obtain indicators of quality of local government expenditures.

To complement the performance analysis, I have collected data on the achievement of performance goals as part of the Municipal Incentives Plan. The plan, started by the central government in 2010, transfers of additional resources to local governments based on the fulfillment of goals. These are established every semester and have to do with various issues, from public investment to identity registration. MEF's Directorate of Quality of Public Spending has provided information on the achievement of each goal. This data was combined with the weight assigned to each goal to obtain an achievement score.[31] This can serve as a proxy of government performance.

For the political production analysis, I use data from RENAMU on local decree production. Peruvian municipalities produce a variety of political instruments. I focus on the three most important. These are municipal laws, mayoral resolutions and local council agreements. Municipal laws ("Ordenanzas") are not directly linked to everyday administrative work. These have to do mainly with the establishment of new taxes and tariffs. Mayoral resolutions constitute the main type of decree produced by the Mayor's Office. These should be correlated with the mayor's effort as most of the mayor's administrative duties require their production. For example, all municipal management instruments must be approved by a mayoral resolution. Finally, local council agreements are the council's main political output. These should be correlated with the number of issues put forward by council members (including the mayor) for discussion during sessions.

To test the effect on the local political context, I have gathered detailed information on election

[31]The weights are set to determine the amount of funds to be transferred. These are public knowledge as they are published by MEF at the start of every year.

results for the last four local elections. This data was provided by the JNE. The data includes the electoral population and the number of valid votes cast for each party list in each jurisdiction. The data can be linked to the candidate database so as to obtain the vote share of different types of candidates. Moreover, for the case of the 2010 elections, I have collected information on several political participation indicators. These are publicly available and can be obtained from the JNE's Infogob system.[32] The JNE also provided data on local recall processes. The information includes the details of the admitted recall proposals[33] and recall voting results from 2002 onward. However, the JNE does not have the information on recall kits, the initial step for every recall process.[34] Hence, I have compiled data on these kits from the National Office for Electoral Processes.

To check for alternative explanations for my main results, I have collected information on project quality and local accountability. These come from previously unused sources. In particular, I have gathered micro-level data on projects submitted to the Regional and Local Investment Promotional Fund (FONIPREL). FONIPREL is a contestable public investment fund administered by MEF. Its objective is to co-finance pre-investment studies and public investment projects that aim at reducing the infrastructure gap and alleviate poverty. The data includes the type of proposal, the specific project it aims to implement and whether it was allocated funds. Moreover, the database includes information on corruption cases against current and former mayors. The information is disaggregated by the legal state of the corruption complaint.[35] This data is product of a three-year effort by the Anti-Corruption Office, which extended access to this information. This is the first time that information on corruption cases at the local level has been aggregated and systematized in the country.

Finally, information on other municipal social and demographic characteristics has been obtained from the 2005 and 2007 Population Census, and from United Nations Development Programme (UNDP). From the censuses, I compile information on provision of public services such as water, sewage and electricity and population education levels. The UNDP provides updated estimates on municipal per capita income based on information from the National Household Survey and the 2007 Census.

Table 3 shows the descriptive statistics for the main outcome and control variables. As afore-

[32]The system is the same one that stores the candidates' curricula vitae.

[33]The information includes the identity of the promoter. This can be linked to candidates lists to check if a past candidate is promoting the recall. It also includes information on the reason for the recall.

[34]To start a recall, the promoter has to buy a recall kit in order to start collecting signatures from citizens who support the referendum.

[35]For example, it is possible to distinguish between those complaints that are preliminary inquiries and those that already involve formal accusations.

mentioned, municipalities tend to be relatively small, with an average electoral population of around 4,700 and total population of 8,360. Moreover, at the time the wage reform was implemented, these were, on average, poor and uneducated. Data on politician selection shows that candidates tend to be more educated than the average citizen. However, the average education level is still low. Of those mayors elected in the 2010 elections whose candidacies were not nullified, only 56% had completed tertiary studies and 33% had university degrees. Moreover, as expected, candidates tend to have more experience in the public than in the private sector. Information on performance shows that the budget execution problem remains. In that regard, a large variance is observed. Some municipalities implement less than 20% of their budgets while others carry out all their budgeted projects. A similar picture is presented by the data on goals achieved under the Municipal Incentives Plan. Finally, it can be noted that the local political landscape is relatively fragmented. On average, around 7 parties presented candidates in the 2010 elections. The average mayor won the election with 35% of valid votes. Recalls have been used extensively: 23% of mayors have been subject to recall voting and 6% have been recalled.

3.2 Methodology

A politician who exerts more effort or whose unobservable characteristics are more favorable will, most likely, earn a higher wage (Fisman and di Tella, 2004). This means that OLS estimates for the effect of wages can be biased. To address endogeneity, I will follow an instrumental variable approach. The reform wage caps will serve as the excluded instrument. Identification is obtained from the fact that wages are strongly correlated with the caps and that the latter are a step function of electoral population. Insofar other characteristics that determine outcomes vary smoothly (and proper electoral population controls are introduced), the effect of wages will be identified. Unlike a fuzzy regression discontinuity design (RDD), the above approach allows to extend the validity of the results to the entire sample. Hence, for the first time, it is possible to obtain evidence for a large set of executive politicians.

To identify the effects, the following two-stage least squares (TSLS) regression will be estimated:

$$w_i = \gamma_0 + \gamma_1 w_i^{cap} + f(Pe_i) + x_i'\zeta + \eta_i \tag{1}$$

$$y_i = \beta_0 + \beta_1 \hat{w}_i + f(Pe_i) + x_i'\lambda + \epsilon_i \tag{2}$$

Equation 1 describes the initial stage of the TSLS model. Mayoral wages (w_i) are modeled as a function of the excluded instrument, the wage caps (w_i^{cap}), a continuous function ($f(\cdot)$) that depends on the municipal electoral population (Pe_i) and a set of municipal control variables (x_i). Equation 2 presents the second stage. The outcome variable, y_i, is modeled as a function of the first-stage wage estimate and controls included in the first stage regression.

In the baseline specification, $f(Pe)$ will take the form of a cubic polynomial with linear splines whose cutoffs delimit wage categories XV and XVI.[36] These two group around 40% of the sample. Given the numerous wage categories, this specification is not overly restrictive. Moreover, it provides sufficient flexibility to capture effects linked to continuous changes in electoral population.

I will exclude provincial and Lima/Callao municipalities from the estimation sample. These are given a special treatment in the reform. Moreover, they have different economic and political characteristics when compared to other municipalities. For example, these tend to have more proficient organizations and are subject to greater political competition. Hence, including them in the sample can lead to the effect of wages being confounded with that of other municipal attributes.

Moreover, I will also exclude five municipalities where mayoral wages are significantly higher than the cap. There are few cases in which mayors have set a wage higher than the limit. In most of these, the wage is lower than the subsequent wage cap. This is not the case in the five municipalities I exclude. To avoid potential biases due to problems in wage data, I exclude these outliers. However, the results are robust to their inclusion.

The estimation will focus on the 2011-2014 electoral cycle. There are several reasons why this is convenient. First, as Figure 2 shows, authorities elected in the 2010 elections were the first ones to be selected under the wage cap system. Even though a 2004 law established that wages should depend on the electoral population, limits were not set until after the 2006 election. Second, better and more comprehensive data is available for that period. For example, it is only from 2009 onwards that MEF publishes detailed budget information for all local governments, including data on wages. Moreover, the CENEGREL provides individual-level data on authorities and officials in office in 2014. In addition to this, the JNE's local candidates' data is more comprehensive and detailed for those who run for office in the last election two local elections (2010 and 2014).

Some of my outcome variables are closely related. For example, for the case of political production, I estimate the impact on the production of several types of political decrees. Those effects are related as they reflect politician effort. Hence, it is important to have a summary statistic for

[36] The cutoffs that delimit these categories are 1500, 2500 and 5000.

comparable outcomes. Following Kling et al. (2004) and Finkelstein et al. (2012), I construct the following average standardized wage effect for a set of related outcomes K:

$$\sum_{k \in K} \frac{1}{K} \frac{\beta_{1k}}{\sigma_k} \tag{3}$$

where β_{1k} is the effect of wages on outcome $k \in K$ as estimated in Equation 2 and σ_k is the standard deviation of outcome k after discounting the effect of wages. Taking out the effect of wages allows me to have a similar statistic to that of Kling et al. (2004) and Finkelstein et al. (2012) for the case of a continuous treatment.[37] To perform inference, I take into account the covariance between the elements $\frac{\beta_{1k}}{\sigma_k}$.[38] To do so, I estimate a pooled TSLS for outcomes $k \in K$. The regression variance-covariance matrix is then used to calculate the standard deviation.

3.3 First Stage Results

Table 4 shows the first stage estimates for several specifications. The results reveal the strength of the instrument. Wage caps are a very good predictor of mayoral wages. This conclusion is robust to the use of various electoral population polynomials and controls.

The strength of the instrument can be explained by the peculiar characteristics of the wage reform. Unlike similar reforms in other countries, the Peruvian one included a significant number of wage categories. This strategy befitted the government's objective to limit the use of transfers to finance payroll increases. Moreover, wage caps were set at relatively low levels compared to previous wages. This lead to more than half of municipalities having to adjust to the new limits. Hence, wage limits are binding for a significant fraction of the sample. In addition, out of those municipalities which moved categories from 2007 to 2011, more than half adjusted their wages. This was done even though all Budget Laws since 2007 prohibit public wage increases.[39] This means that wage caps based on 2010 electoral population is a better predictor than previous caps.

The results also show a change in the coefficient from around 0.95 to 0.65 when linear splines are included (Columns 4 to 5). The explanation for this is simple. Linear splines provide additional flexibility in the electoral population polynomial. In particular, the splines adequately capture the dynamics among small municipalities, which constitute a significant fraction of the data. This is important for the first stage estimates as bigger municipalities tend to set their wages closer to the

[37] These studies use the standard deviation of the outcome variable in the control group. In the present case, there is no control group. Hence, by substracting the effect of wages a comparable statistic is produced.

[38] σ_k is taken as given when calculating the variance of the statistic.

[39] Local authorities argue that wages are only valid for the electoral cycle in which they were set.

limit. This happens for two reasons. First, mayors in larger municipalities tend to have higher opportunity costs. Hence, they used to earn higher wages before the reform was introduced.[40] Second, larger municipalities are less likely to have experienced a wage category between the 2007-2010 and the 2011-2014 cycles. Hence, their mayors are less likely to face the dilemma of adjusting their wages upwards. If splines are not introduced, the coefficients will not reflect that several municipalities around small population cut-offs do not adjust their wages upwards. The difference between the two slopes can be seen in Figure 3. This shows the partial regression plots for wage caps with and without flexible population controls.

Since the instrument is correlated with the electoral population, it can be correlated with other municipal characteristics which affect outcome variables. Misspecification of the electoral population polynomial can lead to biased estimates. To test the appropriateness of my baseline specification, I conduct a series of placebo regressions. I regressed past realizations of a broad set of municipal variables against the wage cap, the baseline electoral population polynomial and a set of controls. The results are shown in Table 5. The instrument does not have a significant effect on a number of relevant pre-reform outcomes. For example, it does not explain the 2002-2006 public investment execution rate nor revenue, expenditure and investment per capita. Moreover, there is no significant impact on how the budget is allocated. Finally, the instrument is not a good predictor of past municipal socioeconomic characteristics and the past political landscape.

Another concern has to do with manipulation of the running variable. It is plausible that municipalities on the lower side of a cut-off might alter the population count to move to a new wage category. If this is the case, one should expect to observe a positive discontinuity in the electoral population density around the cut-offs. To test for this, I carry out the density test suggested by McCrary (2008). Figure 4 presents the graphical representation of the results for the main population cut-offs. No significant discontinuities exist. Moreover, the jumps in the density function tend to be negative. This result suggest that there is no systematic manipulation by local politicians.

This is not surprising given the institutional framework that governs the electoral population count. The authority in charge of the process is the National Identification and Civil Status Registry (RENIEC), a central government institution. The count is later published by the JNE, which as RENIEC, has no political connection with local governments. Moreover, bringing outside voters

[40] For example, out of the districts that composed the Lima Metropolitan Area, the highest earning region in the country, 75% of districts had to adjust their wage downwards after the introduction of the reform.

is a costly process. Voters need to change their legal address in their national identity card. This can only be done months before the election. While there is no evidence of manipulation to obtain higher wages, a few candidates have been accused of boosting their electoral prospects by paying voters to change their address.[41] However, this phenomenon appears to be limited to very small districts and, most importantly, is uncorrelated with reform cut-offs.

As aforementioned, the reform limits the monthly allowances for council members to 30% of the mayor's wage. This means that council earnings can be correlated with mayoral wages. In fact, it appears that this is the case. Wage caps are also a good predictor of council allowances. This may raise the concern that mayoral wages could affect outcomes through changes in council earnings. However, this is very unlikely. Given the 30% limit, the effect of mayoral wages on council allowances is relatively small. Moreover, unlike mayors, council members are part-time politicians. Council allowances constitute a secondary source of income. Hence, any impact via allowances is of second order.[42] Moreover, changes in council members' selection and behavior is unlikely to affect most outcomes. In most cases, candidates for mayors are known before council candidates. This means it is unlikely that the latter affect the selection of the former. In addition, bureaucrat selection is the responsibility of the mayor's office. Regarding performance, once the budget has been approved, it is unlikely that council members affect public investment performance except through increased political opposition. This should depend primarily on interest for mayoral office.

4 Effect on Capacity and Selection

4.1 Politician Selection

I first study the impact on the quality of the elected mayor. As indicators of quality, I look at both education level and professional experience. Information is drawn from the mayors' curriculum vitae and from the CENEGREL. This latter source allows me to identify the effect on relevant professional experience, including public and private management and experience in regional projects.[43] While management skills are essential for public administration, due to lack of data, previous studies have not been able to shed light on it.

[41] In Peru, this phenomenon is known as "votos golondrinos" or "sparrow voters".

[42] Gagliarducci and Nannicini (2013) also face a similar interpretation dilemma. In their case, wages for mayors and executive committee members increase at the same cut-offs. However, they state that the effect is being driven by mayors being paid more. In their case, executive committee wages were limited to between 20% and 50% of mayor's wage. Since, in the present case, the limit for council earnings is closer to their lower bound, the assumption that the effect on council payments is of second order is even more plausible.

[43] CENEGREL collects information on this dimension as it is deemed important for public investment performance.

Table 6 presents the results. Unexpectedly, higher wages do not lead to an increase in education levels and management experience. Better-paid mayors are less likely to have completed any type of tertiary studies (Column 1).[44] A 20% increase in wages decreases the probability that the mayor has completed tertiary studies by 8.6%. The results for management experience also point to a negative effect on selection.[45] Higher wages lead to a decrease in the number of years of management experience in the private sector and experience in the development of regional projects (Columns 4 and 6). The biggest impact is on private management experience. A one standard deviation change in wages leads to a drop of 3.7 years of experience. Moreover, there is also a negative impact on the extensive margin. The coefficient in column 7 implies that a 20% increase in wages leads to a decrease of around 4.5% in the probability that the mayor has private management experience. However, the effect on public management experience is not significant. This translates into the average standardized effect on management experience also being not significant.

Are the above effects being driven by a decrease in the quality of the candidate pool? The results on the characteristics of mayoral candidates suggest that this is not the case. The effects on the 2010 candidate pool are presented in Table 7. There is no evidence of an effect on the fraction of candidates that have completed tertiary studies and those that have a university degree (Columns 1 and 2). Moreover, the results regarding work experience reveal a couple of interesting patterns. First, higher-paid municipalities have a smaller fraction of candidates that have held a position inside a political movement (Column 6). Second, while the impacts are not significant, the coefficients on public and private work experience point to higher wages crowding out candidates coming from the public sector.

The above results suggest that the negative selection effect is not being driven by the worsening of the candidate pool. Hence, wages are producing a sorting effect. That is, these alter the relative ranking of certain types of candidates without changing the composition of the entire pool. To check if this effect also holds outside the winning candidate, I analyze the joint quality of candidates ranked second and third according to their electoral results.[46] Moreover, I also analyze the effect on the voting share of educated candidates. This is a useful test for the magnitude of the sorting effect.

Table 8 reports the results. While the effects on education levels are not significant, there is a

[44] It is not possible to control for the quality of the degree that the mayor is obtaining. Higher education in Peru is becoming increasingly accessible. However, there is large variance in the quality of the various institutions.

[45] The analysis excludes those districts whose mayors have been recalled. This is because the data comes from the CENEGREL, which was carried out after the two recall processes of the 2011-2014 electoral cycle.

[46] A similar analysis is carried out by Gagliarducci and Nannicini (2013). They check the quality of the top three candidates. However, their purpose is to use this measure as a proxy of the quality of the whole pool.

slight, negative pattern not observed for the entire candidate pool. Most importantly, the vote share of those candidates with tertiary education decreases substantially (Column 3). A one standard deviation change in the wage leads to a 12.9% drop in the vote share. This points to more educated candidates performing worse in terms of electoral outcomes in better-paid municipalities. A possible cause for this effect will be discussed later in section 6.

4.2 Bureaucrat Selection and Bureaucratic Capacity

The mayor is the main administrative authority and plays a key role in local policy making and local government performance. Nonetheless, government capacity also depends on the competence of its bureaucrats. Hence, it is important to analyze if mayoral wages can alter municipal bureaucratic capacity.

Given how municipal public wages are determined in Peru, mayoral wages can have an impact via two mechanisms. First, the quality of bureaucrats can depend on politician selection and behavior, which can be directly linked to wages. Second, a better-paid mayor can offer higher salaries as the mayor has to be the highest paid local authority. However, it is unlikely that an impact will be produced through this second mechanism. Most local government wages tend to be significantly lower compared to that of the mayor. Hence, these are not bounded by mayoral wages and are unlikely to increase significantly when these increase. In addition, mayors have alternative mechanisms to hire personnel. For example, they can hire workers as specialized services. Those earnings are not bounded by the mayor's wage. I find that neither wage caps nor the predicted wage are good predictors of average municipal wages. This result also holds for nominated personnel (which groups top earners in the municipal government). Hence, if there is an effect on the bureaucratic body, it can be attributed to factors other than increases in bureaucrats' wages.

I first analyze the impact on bureaucrat selection. In most cases, it is hard to find individual level data on local government officials in developing countries. In this case, the CENEGREL provides such data. The census collected information on education and tenure for municipal investment managers. This information is available for the three investment units that a municipality can have under the SNIP. An analysis for all top bureaucrats would be ideal. However, it cannot be done due to limitations in the data. Nonetheless, the focus on municipal investment managers does not lead to a significant loss of information as most municipalities have a small number of managers.[47]

[47] According to the data reported in the 2013 RENAMU, district municipalities had, on average, 10 managers and main officials.

Table 9 presents the results for bureaucrat selection. These show no evidence of an effect on bureaucrat selection. In particular, there is no evidence of an impact on the probability that investment managers have graduate studies (Columns 1 to 3).[48] Moreover, there are no significant effects on manager tenure (Columns 4 to 6). This no result can be the product of relatively high managerial turnover. In fact, the average tenure for all three types of investment managers is more than a year lower than that of a non-incumbent mayor.

While there are no effects on top investment bureaucrats, there might be impacts on the rest of the municipal bureaucratic body. The results on the indexes of bureaucratic capacity are presented in Table 10. These provide no evidence of a positive impact on municipal needs for technical assistance and execution (Columns 1 to 3). The no result holds for three indexes of technical needs. Moreover, there is also no effect on technical assistance and training needs regarding public investment matters (Columns 4 and 5). If there is an effect, the coefficients indicate that this impact is more likely to be negative as estimates point to a positive effect on assistance and training needs. For the management index, there is also no evidence of an effect (Column 6). Hence, the results for the whole bureaucratic body are in line with those for municipal managers.

5 Effect on Performance

5.1 Public Investment Performance

As aforementioned, Peruvian local governments play a key role regarding public investment. However, these have experienced poor performance in this matter. In particular, they have faced obstacles when spending their investment budgets. The performance analysis will focus on this issue.

To measure public investment performance, I will use the execution rate of the public investment budget. It is defined as the percentage of the budget which was actually spent. It reflects how good the local government is at implementing their annual budgeted projects. This measure is used extensively in Peru and other developing countries to measure public investment performance.[49]

Before proceeding, it is worth noting the advantages of focusing on public investment implementation and execution rates as an indicator of local government performance. First, investment implementation is of great importance for the population, the central government and municipal-

[48] The focus on graduate studies is due to most managers having completed university studies.

[49] A recent staff report by the IMF suggests a very similar indicator as a measure of public investment implementation (IMF, 2015).

ities[50], and it is within the control of the mayor. This contrasts with traditional policy outcomes such as total revenue and local tax collection.[51] Second, data is easily available, comparable and difficult to manipulate.[52] Hence, local media outlets can easily obtain and transmit the information to the local population.[53] Third, public investment execution does vary significantly across municipalities. This variance has been linked to factors that affect overall government performance such as lack of local government capabilities (Loayza et al., 2014, Vasquez, 2015). Finally, there might be concerns that changes in this indicator are tainted by corruption and poor project quality and that this can affect the results. In Section 6, I show that this is not the case.

The focus on this dimension of performance differs from that of Gagliarducci and Nannicini (2013). This is merited by the substantial differences in contexts. Gagliarducci and Nannicini (2013) uses a related indicator to measure efficiency of local bureaucracy. They calculate the ratio of outlays paid to spent outlays, which reflects speed of payment rather than of project implementation. In industrialized countries, delays in implementation at the local level are not as widespread as in developing countries. For the former, reducing red tape and the size of local bureaucracies takes priority. For the latter, project implementation is a first-order concern for policy makers.[54]

Table 11 shows the effect of wages on public investment implementation for the total investment budget and for subsets of it. These show that wages have a negative and significant impact on execution rates. For the overall budget, a one standard deviation change in wages produces a decrease of 0.52 standard deviations in the execution rate. The negative effect also holds when only expenditures in projects themselves are included[55] (Column 2). Moreover, there is a slightly greater effect when only investments funded by "determined resources"[56] are considered (Column 3). Finally, a negative impact is also observed in the execution of those investments that are cataloged

[50]Local authorities are constantly pressured by both the central government and the local population to implement their investment budgets. Failure to implement the public investment budget can be particularly dangerous amid a weak institutional and political context. Ponce and McClintock (2014) show that low execution rates increase the chances of social protests. In a extreme case of this, they note that the mayor of the municipality of Ilave was assassinated after being tortured for failing to spend municipal funds on new infrastructure.

[51]As described in Section 2, Peruvian municipalities have limited tax and debt capacity.

[52]Data is drawn from the municipal public accounts which are reviewed by MEF.

[53]Both national and local newspapers produce articles comparing the relative performance of local authorities in matters of public investment implementation.

[54]A closer measure for the Italian case would be to compare local government balance sheet results (actual expenditures) with budgeted expenditures. Repetto (2015) shows that, for the case of capital expenditures, these two amounts differ significantly. However, the differences do not reflect the same underlying problem that is observed in Peru. In the Italian case, this difference is due to mayors programming an excess of expenditures to avoid having to request additional funds later in the year.

[55]This excludes expenditures in activities related to the projects such as procurement processes and investment studies.

[56]These resources, which include main government central transfers, are more likely to be underutilized. Unlike other sources of municipal revenues, these do not revert to the central government if not employed.

as "strategic"[57] by MEF.

Is it the case that this negative impact holds for alternative performance indicators? To check if this is so, I construct performance scores using information from the Municipal Incentives Plan. As mentioned before, this is a central government program whereby local governments receive additional funds for the accomplishment of predefined performance goals. These goals are diverse and have to do with various municipal tasks. In the past two years, public investment execution has also been included as a goal by MEF. This reinforces the appropriateness of execution rates as performance indicators. However, the public investment goal also has to do with how the investment budget is allocated.[58] As mentioned in Section 3, I will use the percentage and the value of the goals achieved as measures of performance.

Table 12 shows the results for this alternative indicators. Again, a negative effect is observed. This holds for the two measures and is slightly stronger for the value of goals achieved. As both indicators are constructed based on the same performance data, I calculate the average standardized effect for both measures. The result implies that a one standard deviation change in wage leads to a 34% drop in goal achievement.

5.2 Political Production

Higher wages are supposed to motivate politicians to reduce shirking while in office. This should lead to an increase in political production. Previous research has studied the effect of politicians' wages on legislative productivity with mixed results (Ferraz and Finan, 2011b, Fisman et al., 2015). For the case of executive politicians, there is no evidence on the effect on political output. In this subsection, I test for an effect on political effort by analyzing the impact on the production of local decrees.

Table 13 shows the impact on the average production of the three main types of local decrees. Wages do not have a significant impact on political production. This result holds for all decrees. In particular, the results are highly insignificant for municipal laws and mayoral resolutions. Moreover, there is no evidence of a significant change based on the results for the average standardized effect. The estimate is very small. It implies that a one standard deviation change in wages increases political production by less than 0.05 of a standard deviation.

When considering the above results, it has to be noted that all Peruvian mayors are full-time

[57] This includes investments in important sectors like education, health, sewage and transport.

[58] Municipalities not only have to achieve a certain level of execution but also have to spend a certain fraction of their budget in strategic and competitive sectors.

authorities. This differs from the case of Brazilian local legislators studied by Ferraz and Finan (2011b) and Italian mayors studied by Gagliarducci and Nannicini (2013). For Peruvian mayors, it is not the case that higher wages could induce a substitution between private and public work. Hence, the analysis for political production should not be directly compared with previous results. It is only for council members, who are part-time politicians, for whom a more direct comparison can be made. Perhaps this is why the estimate for council agreements is, by far, the largest in relative term among all three decrees.

6 Discussion

6.1 Possible Explanations

The negative impact of wages on performance is unexpected. A trivial explanation for this is that execution rates are not a good indicator of overall public investment performance. For example, it can be that lower rates are the product of better-paid mayors investing in better projects. These could be more complex to implement and have greater chances of delays.

To address this first concern, I analyze the impact on proposals submitted to FONIPREL. As aforementioned, FONIPREL is a contestable public investment fund run by the central government. All municipalities can access these funds. However, if municipalities violate FONIPREL project implementation guidelines, these can be excluded from future contests. FONIPREL is a relatively large fund. Since its inception in 2009, over 12000 proposals have been submitted by sub-national governments.

Table 14 shows the impact of wages on the number of proposals submitted by municipalities to the fund and on the number of winning proposals. There is no evidence that better-paid mayors submit more proposals, nor that their projects are more successful at obtaining funds. Hence, I find no support for the hypothesis that the performance results are the product of better-paid mayors investing in higher-quality projects.

The results might also be driven by better-paid mayors being more accountable. The argument is that higher wages decrease the incentives for local capture. Capture can lead to an artificial increase in execution rates. In most cases, it is quite difficult to provide evidence on this. Micro-level data on corruption is rarely available. However, in this case, it is available thanks to a recent effort by the Anti-Corruption Office to systematize local government corruption cases. In particular, it is possible to check the effect of wages on corruption cases filed against local mayors.

Table 15 shows the results. There is no evidence of a negative impact on whether the mayor has at least one corruption complaint nor on their number. The result holds for both total complaints and non-preliminary investigations. A separate analysis for non-preliminary complaints is merited as a fraction of preliminary probes might be unsubstantiated complaints. This can be the product of increased political opposition and lead to biased results. Hence, the results provide no evidence that better-paid mayors are less corrupt.

In part, the performance results might be driven by negative selection effects. A politician that is less educated and has less management experience could be worse at implementing public investment projects. However, there is little evidence to support this claim. To check the effect of education, I compare the performance of municipalities which barely elected a mayor with tertiary studies against those which barely did not. Figure 5 provides the graphical representation of the sharp RD analysis which uses data from the 2010 local elections. The results show no significant effects. Reduced-form estimates point to a similar conclusion. Table 19 shows a positive but insignificant impact of education on public investment implementation. The same occurs with the mayor's private management experience. The mayor's public management experience and the tenure of the investment manager do have positive and significant effects. However, these two account for a small fraction of the performance results.

6.2 Political Economy Mechanism

Selection does not appear to have a strong effect on performance. Therefore, the question of what is driving the negative change in performance remains unanswered. Since this study analyzes political actors operating in a political environment, it is befitting to search for an answer by examining the effects on the local political landscape. Hence, I study the impact of wages on political participation, opposition and fragmentation.

Table 16 shows the results for political participation. As expected, there is a strong positive effect on the number of party lists (Column 1). A one standard deviation in wages leads to 1.7 more parties presenting candidates. The number of parties running as a fraction of the total number of parties registered in the municipality also increases (Column 2). Moreover, there is a positive effect on voter turnout. This effect is surprising as voting is mandatory in the country. However, increased political competition can be driving this result. Interestingly, higher wages also tend to attract less young candidates[59] as a fraction of the total number of candidates (Column 4).

[59]Peru maintains quotas for young candidates (those younger than 29) and women. 20% of candidates in a party

Table 17 shows the effects on political opposition and fragmentation. Wages significantly decrease the support for the winner's party (Column 1). A one standard deviation change in wages leads to a drop of 8.2% in the winner's vote share. Moreover, there is a significant negative effect on political concentration. The number of effective parties increases significantly (Column 4). Most importantly, both the HHI and the Concentration Index, which measures the share of votes of the two leading parties, decrease (Columns 5 and 6). The effect of a one standard deviation change in wages on political fragmentation is between 0.85 and 0.9 standard deviations. Even though the effect on reelection probabilities are statistically insignificant, the magnitude is non-negligible (Column 3). A 10% change in the average wage leads to a 0.044 drop in the probability that the incumbents gets reelected. Hence, there is substantial evidence to support the claim that wages lead to greater political opposition and fragmentation.

Most analysis of political opposition would be limited to electoral results. However, political opposition can last throughout the mayor's term. Recall voting outcomes provide a measure for this. Peru allows for mayors and local council members to be recalled during their second and third year in office. The recall process is initiated by citizens. For a mayor to be recalled, 50% of recall voters must be in favor of the recall and turnout must be above 50%. Hence, greater political opposition should translate into a higher probability of being recalled.[60] It should be noted that recall voting is quite common in the country. In fact, nowhere else is this mechanism used so extensively (Welp, 2015).

To recall an authority, a citizen, called the promoter, buys a recall kit from the National Office of Electoral Processes (ONPE). In this kit, the promoter collects the signatures from local citizens in favor of the recall. For the voting process to take place, the promoter has to collect signatures from at least 25% of the electoral population. The recall request is then submitted to the ONPE and JNE for its verification and approval. The JNE collects, among other details of the recall request, the reasons for it as stated by the promoter.

Table 18 shows the impact on the recall process. Wages do not have a significant effect on the number of recall kits bought nor on whether a recall vote takes place (Columns (1) and (2)). However, there is a positive and significant impact on the probability that the mayor gets recalled (Column 5). A 10% change in average wages increases the probability of getting recalled by 0.042.

list (includes the candidate for mayor and those for council members) must be younger than 29 and 30% must be women.

[60]The country is one of a few to allow recall voting, particularly at the local level. Peru is one of 23 countries to allow some type of recall voting. In 2008, only 7 countries had provisions for recalls to be initiated and approved by citizens at the local level (Beramendi et al., 2008).

The above results show a strong effect of wages on the local political landscape. Given this, I propose the following novel mechanism to explain the performance results. Better wages destabilize the local political environment by increasing political opposition and fragmentation. A divided political context where the mayor lacks political support means that he/she will face more challenges against his policy agenda. This disputes can occur even for welfare enhancing public investment projects.[61] Moreover, more competition and opposition induces greater mayoral turnover. Less support for the mayor and greater turnover leads, in turn, to lower performance.

This explanation appears to be well-suited to the present context. As most developing countries, Peru is characterized by a weak institutional setting and a weak political party system.[62] In this context, local social and political instability can easily affect local government performance.[63] Moreover, weak political systems can lead to issues with politician selection. Most importantly, it implies a malleable political environment. Hence, a change in the incentives to run for office can have substantial effects in electoral competition and political opposition.[64]

Previous literature shows the importance of political factors for Peruvian local government performance. Loayza et al. (2014) finds a significant effect of political support for the mayor, measured as the winner's vote share, on public investment implementation. Its importance is similar to that of other relevant factors like the poverty rate. Political competition and opposition are also important as they can lead to greater mayoral turnover. Turnover leads to an authority with lower on-the-job experience and disrupts the continuity of government plans. Aragón and Pique (2015) show that incumbency affects measures of technical capacity. While the effect is decreasing over time, it remains significant for most of the mayor's term. This points to on-the-job experience being important for local government performance. There is also evidence that incumbency affects public investment implementation (Loayza et al., 2014, Vasquez, 2015).

These impacts are amplified by the use of recall voting. Recalls are used extensively by political losers and can be obstructive for the mayor's regime (Welp, 2015). Recalls increase the bargaining power of political opposition and can lead to a continuous state of political campaigning.[65] This

[61] Beath et al. (2014) find evidence which supports greater heterogeneity in preferences for type and location of development projects can lead to worse outcomes.

[62] For a summary of the weakness of political party systems in Peru and other South American countries, see Sabatini (2003).

[63] Loayza et al. (2014) states that, in Peru, "the level of popular support for local authorities is arguably a key factor in their ability to conduct their plans and, therefore, execute their budget."

[64] Sabatini (2003) shows that after the decentralization process in Peru, regional and local political movements have filed the void left by national parties. Regional and local political movements make it easier for citizens unaffiliated to political parties to enter the electoral race.

[65] Welp (2015) states the following on recall voting in Peru: "The situation created in Peru can be compared with a permanent campaign, where the phase of electoral campaigning cannot be distinguished any more from the phase

happens even though the mayor's party has a majority in the local council. Moreover, they lead to greater mayoral turnover. Given the above findings on the effect of incumbency, a successful recall could be detrimental for performance. Reduced-form estimates in Table 19 suggest that this is the case.

It is clear that there is evidence in support of this mechanism. The question is, then, what fraction of the effect on performance can be explained by it? I start by checking the effect attributed to greater political opposition. Loayza et al. (2014), who carry out an extensive analysis of public investment implementation, finds that a 1 percentage point increase in the winner's voter share increases execution rates by around 0.2%. This means that around 25% of the impact of wages can be attributed to increased political opposition.

Changes in the political landscape can also affect mayoral turnover. While the effect of wages on reelection rates is not significant, the magnitude of the impact is substantial.[66] Aragón and Pique (2015) find that, for the 2011-2014 period, reelection increases implementation by around 6.4%.[67] If we add the effect of incumbency, with the caveat that the coefficient of wages is not significant, then the proposed mechanism explains close to 40% of the change in performance. Wages also have a significant impact on the probability that the mayor is recalled. Based on the estimates in Table 19, the increase in this probability can account for an additional 6% of the result.

The above results point to political factors explaining between 25% and 45% of the effect on performance, depending on which factors are considered. The effect of reelection on performance is unambiguously identified. The impact of political opposition is less clear. Hence, these estimates should be interpreted as suggestive evidence. However, the sizable impact of political factors point to this political economy mechanism being one of the main drivers of the performance result.

Finally, in Subsection 4.1, I show that there is evidence of a negative effect on educated candidates. In particular, educated candidates lose vote share as wages increase. Can this effect be due to changes in political conditions? Electoral competition is thought to have a positive effect on selection. This is linked to an improvement in the quality of candidate pool (Galasso and Nannicini, 2011). If this is not the case, then increased competition might make it more difficult for voters to aggregate information. This could explain the negative effect on the support for educated candidates.

More political competition can also lead to greater campaign efforts. This can increase voter

of governing, which results in a non-stop process to seek (or manipulate) public approval."

[66] Hence, it is possible that the lack of significance is due to lack of power.

[67] This estimate should be interpreted with caution as the estimate is on the margin of the 10% significance region.

interest in local elections. However, this latter factor can be detrimental for voters as pointed out by Prato and Wolton (2015). When voters are very interested in the political process, then politicians, both good and bad, have an incentive to campaign on the same platform. They will promise what voters demand, even though the policy might be costly for them to implement. Hence, voters will be unable to separate between politician types.[68]

I find some suggestive evidence that increased political competition can have a negative effect on selection. For example, reduced-form estimates suggest that the effective number of parties has a negative and significant effect on the vote share of candidates with tertiary studies. According to these, the presence of more parties can account for around 14% of the impact of wages on selection. This effect should be interpreted with caution as it is not clearly identified. Nonetheless it points to a possible negative connection between selection and political competition.

An alternative explanation for the negative selection effect is based on "outsider" politicians. Voters might have a preference for a politician with no previous political experience. This preference can have different origins. It can be that outsiders are perceived as intrinsically more honest. Less politically experienced politicians might also be less efficient at capturing resources for their political party (Buisseret and Prato, 2013). Hence, voters might be willing to trade an educated candidate for an outsider.[69] Wages have a positive impact on the relative supply of candidates with no previous political party position. If the "preference for outsiders" argument holds, then the greater relative supply of outsiders could lead to a less educated authority. However, it appears that wages do not have a significant impact on the probability that the mayor has no political party experience.

6.3 Robustness

To check if the main results hold under different specifications, I re-estimate the model using alternative functional forms for the electoral population, alternative controls and restricted samples. Table 20 shows the results for the main auxiliary specifications.

Columns (2) to (4) show the results for alternative electoral population controls. The results are quite consistent across these specifications. The only significant difference with respect to the baseline scenario is related index of technical needs. Both for the case of when the natural logarithm of the electoral population replaces the baseline cubic polynomial and for the case of when no splines

[68] If voters were less interested, then bad politicians, who can be worse at implementing the optimal policy, could campaign on a platform that is not the most preferred by voters. If elected, this platform would have the benefit of being less costly to implement. Since voters are not very engaged in the political process, the expected loss in votes for campaigning on such platform would be smaller than the benefit.

[69] The success of outsider candidates in Peruvian national and local politics is well documented (Sabatini, 2003).

are included, wages have a significant impact on all three indexes. However, the sign of the effects is the same as in the baseline scenario. Hence,

As identification is drawn from wage caps being a step-function of the population, I analyze what are the impacts close to the wage cut-offs. Column (5) shows the results for when the baseline model is re-estimated using only those municipalities whose distance from the cutoff is less than 25% of the corresponding population range. The results are consistent with the baseline ones. There is only a slight difference on the impact on party lists. This effect is now insignificant, though it still remains positive and fairly large in magnitude.

Loayza et al. (2014) suggests that the main factor behind low execution rates is that municipalities do not have the capacity to manage large investment budgets. Moreover, Ardanaz and Maldonado (2015) and Maldonado (2015) show that "canon" transfers can have a non-monotonic impact on Peruvian local government efficiency and political outcomes. To check how sensitive the results are to alternative budget and transfer controls, I replace the control for pre-wage reform transfers with the size of the 2011-2014 public investment budget and with a second order polynomial of "canon" transfers for the same period. The estimates for these two specifications are very similar to those obtained under the baseline model. Hence, it is unlikely that the results are being driven by misspecifications related to the size of the budget or central government transfers.

Finally, I re-estimate the model using the two wage caps as instruments. These are the one calculated using the 2010 electoral population, employed in the baseline model, and the one constructed using the 2006 electoral population. I do this analysis as a fraction of municipalities do not adjust their wages between the 2007-2010 and 2011-2014 electoral periods. This suggests that the previous wage cap can also play a role in determining wages. Again, the results are remarkably consistent with those from the baseline model.

In overall terms, the above results point to a high degree of consistency of the results. Hence, it is unlikely that these are the product of misspecifications regarding the electoral population polynomial, budget and central government transfer controls, and instrument selection.

7 Conclusion

Increasing monetary incentives to politicians seems a reasonable strategy to attract good candidates, avoid shirking while in office and improve government performance. However, previous theoretical work suggest that this is not always the case. The results in this paper support this skepticism.

The evidence shows that higher wages can lead to worse outcomes.

The empirical analysis indicates that higher wages can have a negative impact on performance. Better-paid mayors implement a lower fraction of their investment budgets and accomplish a lower fraction of performance goals. Moreover, the evidence points to a negative impact on politician selection. Higher wages lead to less educated and less experienced elected authorities. Finally, there is no evidence that better-paid mayors increase their political effort, are able to recruit better bureaucrats or strengthen municipal bureaucratic capacity.

A plausible explanation for these results has to do with the effect of wages on the local political landscape. Higher wages increase political competition. Moreover, these lead to greater political opposition and fragmentation. The evidence suggests that more political opposition is detrimental for government performance. In particular, greater political opposition and higher turnover of authorities can lead to local governments being less efficient in terms of public investment implementation.

The present findings contrast with those from Gagliarducci and Nannicini (2013). The impact of changing politicians' wages can depend on the type of authority being analyzed and on the institutional and political context. Increasing wages can prove to be very beneficial in some cases. However, in a context where the party system is malleable, the electorate is highly fragmented and accountability is low, that policy can have drawbacks. In particular, wages can destabilize the local political landscape and fail to produce strong selection and incentive effects.

This conclusion is particularly important given increased efforts in developing countries to implement public sector reforms, which include changes in wages of politicians and bureaucrats. For example, in Peru, the question of how to set public wages is still a matter of debate. Even though the mayoral wage reform was supposed to limit government discretion, mayoral wages are still part of the political agenda. In fact, in mid 2015, the Association of Municipalities presented a proposal to bypass the wage caps. Using novel sources of information from developing countries, additional research can provide policymakers with a more refined picture on the differentiated impact of public wages.

References

Ahmad, J. K., S. Devarajan, S. Khemani, and S. Shah (2005). Decentralization and service delivery. *World Bank Policy Research Working Paper* (3603).

Aragón, F. and R. Pique (2015). Incumbency and Policy Outcomes: Evidence from Peruvian Municipalities.

Ardanaz, M. and S. Maldonado (2015). Natural Resource Windfalls and Efficiency of Local Government Expenditures: Evidence from Peru.

Ashraf, N., O. Bandiera, and S. S. Lee (2014). Do-gooders and Go-getters: Career Incentives, Selection, and Performance in Public Service Delivery.

Bahl, R. and J. Martinez-Vazquez (2013). Sequencing Fiscal Decentralization. *Annals of Economics and Finance 14*(2), 641–687.

Bardhan, P. (2002). Decentralization of Governance and Development. *Journal of Economic perspectives*, 185–205.

Bardhan, P. K. and D. Mookherjee (2006). *Decentralization and Local Governance in Developing Countries: A Comparative Perspective*, Volume 1. The MIT Press.

Beath, A., F. Christia, G. Egorov, and R. Enikolopov (2014). Electoral Rules and the Quality of Politicians: Theory and Evidence from a Field Experiment in Afghanistan. Technical report, National Bureau of Economic Research.

Beramendi, V., A. Ellis, B. Kaufman, M. Kornblith, L. LeDuc, P. McGuire, T. Schiller, and P. Svensson (2008). *Direct democracy: the International IDEA handbook*. IDEA, International Institute for Democracy and Electoral Assistance.

Besley, T. (2004). Paying Politicians: Theory and Evidence. *Journal of the European Economic Association 2*(2-3), 193–215.

Besley, T., T. Persson, and D. M. Sturm (2010). Political Competition, Policy and Growth: Theory and Evidence from the US. *The Review of Economic Studies 77*(4), 1329–1352.

Braendle, T. (2015). Does Remuneration Affect the Discipline and the Selection of Politicians? Evidence from Pay Harmonization in the European Parliament. *Public Choice 162*(1), 1–24.

Buisseret, P. E. and C. Prato (2013). Electoral Control and the Human Capital of Politicians.

Caselli, F. and M. Morelli (2004). Bad Politicians. *Journal of Public Economics 88*(3), 759–782.

Dal Bó, E., F. Finan, and M. A. Rossi (2013). Strengthening State Capabilities: The Role of Financial Incentives in the Call to Public Service. *The Quarterly Journal of Economics 128*(3), 1169–1218.

De Janvry, A., F. Finan, and E. Sadoulet (2012). Local Electoral Incentives and Decentralized Program Performance. *Review of Economics and Statistics 94*(3), 672–685.

Deserranno, E. (2014). Financial Incentives as Signals: Experimental Evidence from the Recruitment of Health Workers.

Ferraz, C. and F. Finan (2011a). Electoral Accountability and Corruption: Evidence from the Audits of Local Governments. *American Economic Review 101*(4), 1274–1311.

Ferraz, C. and F. Finan (2011b). Motivating politicians.

Finkelstein, A., S. Taubman, B. Wright, M. Bernstein, J. Gruber, J. P. Newhouse, H. Allen, and K. Baicker (2012). The Oregon Health Insurance Experiment: Evidence from the First Year. *The Quarterly Journal of Economics 127*(3), 1057–1106.

Finot, I. (2001). Descentralización en América Latina: Teoría y Prática.

Fisman, R. and R. di Tella (2004). Are Politicians Really Paid Like Bureaucrats? *Journal of law and economics 47*(2), 477–513.

Fisman, R., N. A. Harmon, E. Kamenica, and I. Munk (2015). Labor Supply of Politicians. *Journal of the European Economic Association 13*(5), 871–905.

Gagliarducci, S. and T. Nannicini (2013). Do Better Paid Politicians Perform Better? Disentangling Incentives from Selection. *Journal of the European Economic Association 11*(2), 369–398.

Gagliarducci, S., T. Nannicini, and P. Naticchioni (2010). Moonlighting Politicians. *Journal of Public Economics 94*(9), 688–699.

Galasso, V. and T. Nannicini (2011). Competing on Good Politicians. *American Political Science Review 105*(01), 79–99.

IMF (2015). Making Public Investment More Efficient.

Jütting, J. P., C. Kauffmann, I. McDonnell, H. Osterrieder, N. Pinaud, and L. Wegner (2004). Decentralization and Poverty in Developing Countries: Exploring the Impact.

Keefer, P. and S. Khemani (2009). When do Legislators Pass on Pork? The Role of Political Parties in Determining Legislator Effort. *American Political Science Review 103*(01), 99–112.

Kling, J. R., J. B. Liebman, et al. (2004). Experimental Analysis of Neighborhood Effects on Youth.

Lizzeri, A. and N. Persico (2005). A Drawback of Electoral Competition. *Journal of the European Economic Association*, 1318–1348.

Loayza, N. V., J. Rigolini, and O. Calvo-González (2014). More Than You Can Handle: Decentralization and Spending Ability of Peruvian Municipalities. *Economics & Politics 26*(1), 56–78.

Maldonado, S. (2015). Resource Booms and Political Support: Evidence from Peru.

Martinez-Bravo, M., G. P. i Miquel, N. Qian, and Y. Yao (2014). Elections in China.

Mattozzi, A. and A. Merlo (2008). Political Careers or Career Politicians? *Journal of Public Economics 92*(3), 597–608.

McCrary, J. (2008). Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test. *Journal of Econometrics 142*(2), 698–714.

Messner, M. and M. K. Polborn (2004). Paying Politicians. *Journal of Public Economics 88*(12), 2423–2445.

Nath, A. (2014). Bureaucrats and Politicians: How Does Electoral Competition Affect Bureaucratic Performance?

OECD (2013). *Perspectives on Global Development 2013: Industrial Policies in a Changing World*. OECD Publishing.

Ponce, A. F. and C. McClintock (2014). The Explosive Combination of Inefficient Local Bureaucracies and Mining Production: Evidence from Localized Societal Protests in Peru. *Latin American Politics and Society 56*(3), 118–140.

Prato, C. and S. Wolton (2015). The Voters' Curses: Why We Need Goldilocks Voters.

Repetto, L. (2015). Balance Sheet Disclosure and the Budget Cycle of Italian Municipalities.

Sabatini, C. (2003). Decentralization and Political Parties. *Journal of Democracy 14*(2), 138–150.

Sow, M. N. and I. F. Razafimahefa (2015). Fiscal Decentralization and the Efficiency of Public Service Delivery.

Vasquez, M. L. (2015). Local Governments and the Management of Resources Generated by Extractive Industries in Peru. *Sanford Journal of Public Policy 6*(2), 15–32.

Welp, Y. (2015). Recall Referendums in Peruvian Municipalities: A Political Weapon for Bad Losers or an Instrument of Accountability? *Democratization* (ahead-of-print), 1–21.

Appendix

Figure 1: Electoral Population by District (2010)

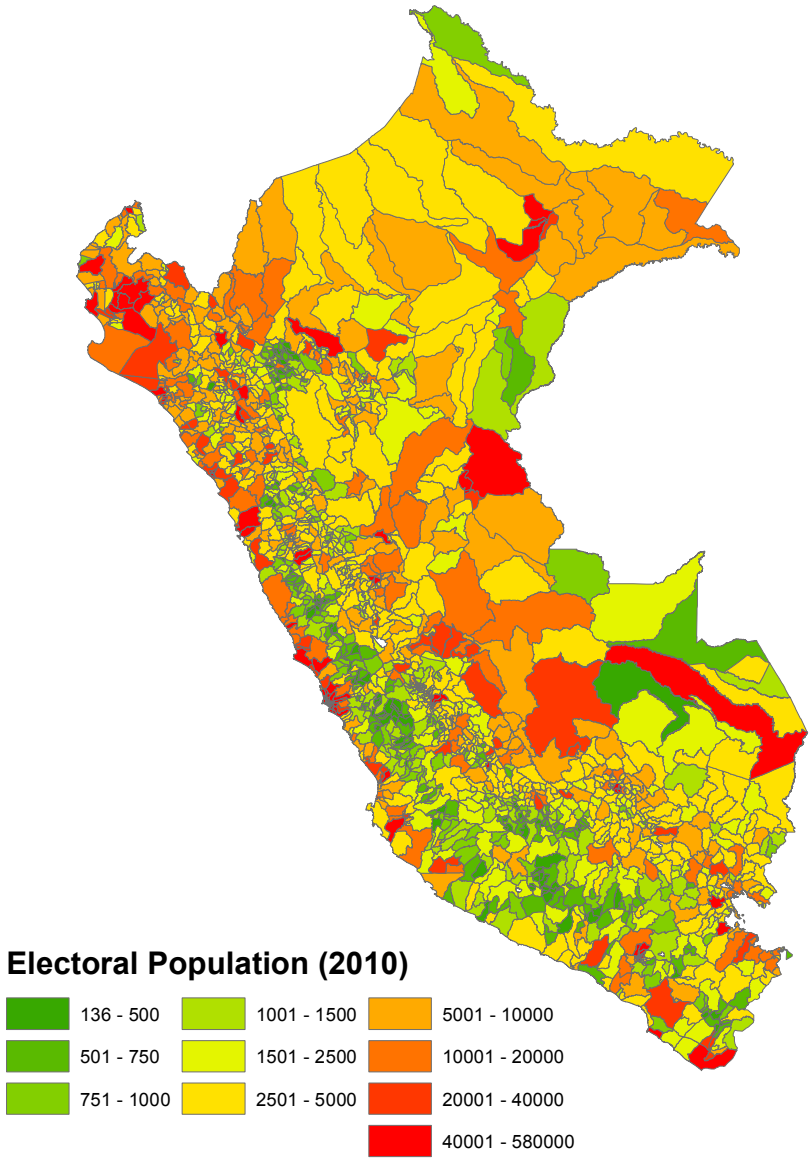


Figure 2: Timeline of Wage Reform in the Context of Local Electoral Cycles

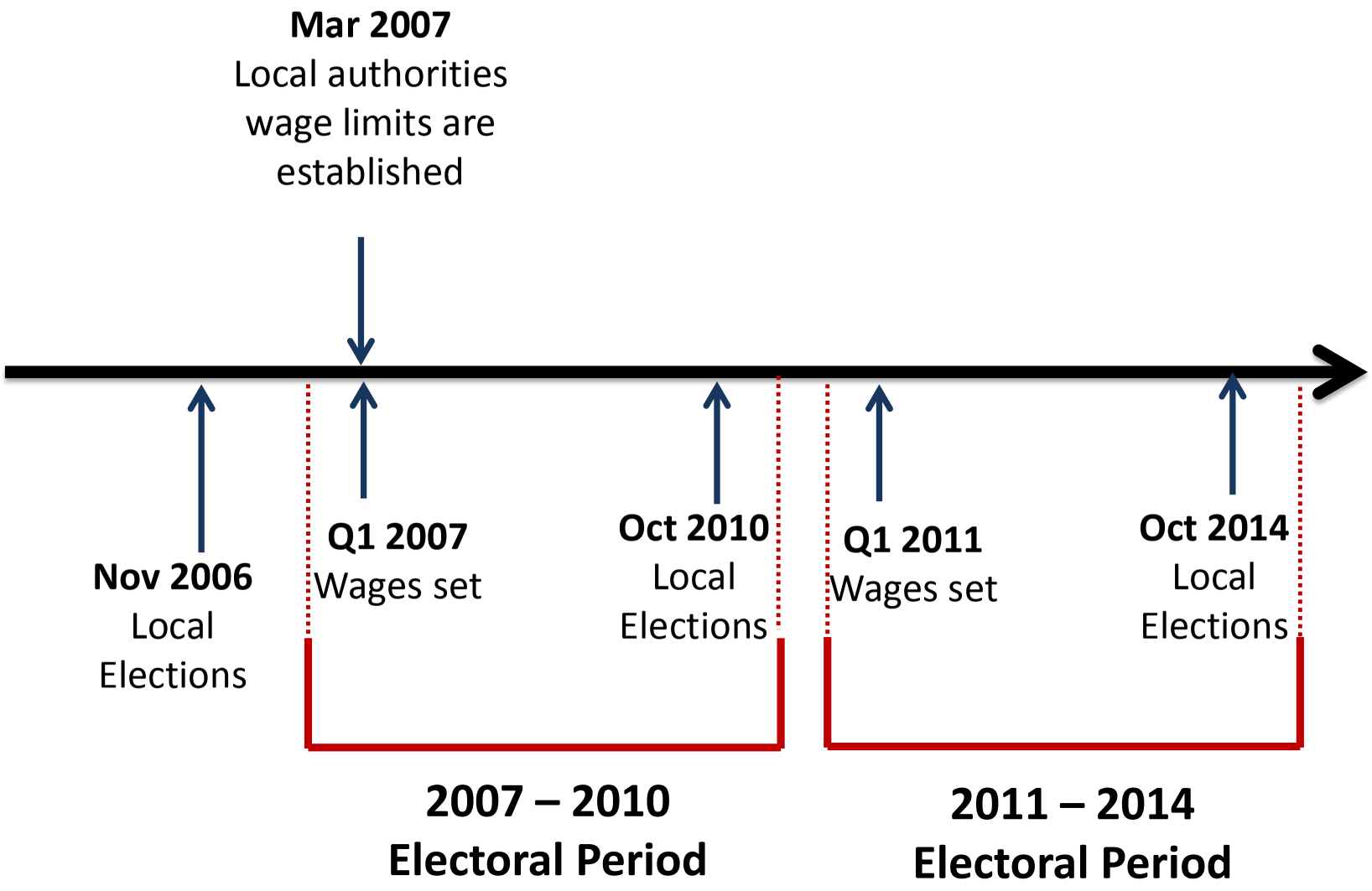


Table 1: Wage Categories - 2010 Electoral Population

Wage Category	Electoral Population Range in '000		Maximum Wage			Distribution of Municipalities			
						All Municipalities		Exclude Provincial and Lima/Callao Districts	
	Min	Max	UISP	PEN	USD	#	%	#	%
I	450		4.25	11050	3536	1	0.1	0	0.0
II	400	450	4	10400	3328	1	0.1	0	0.0
III	350	400	3.75	9750	3120	1	0.1	0	0.0
IV	300	350	3.5	9100	2912	2	0.1	0	0.0
V	250	300	3.25	8450	2704	6	0.3	0	0.0
VI	200	250	3	7800	2496	2	0.1	0	0.0
VII	150	200	2.75	7150	2288	7	0.4	0	0.0
VIII	100	150	2.5	6500	2080	16	0.9	2	0.1
IX	80	100	2.25	5850	1872	12	0.7	3	0.2
X	60	80	2	5200	1664	13	0.7	4	0.3
XI	40	60	1.75	4550	1456	38	2.1	18	1.1
XII	20	40	1.5	3900	1248	69	3.8	37	2.3
XIII	10	20	1.25	3250	1040	128	7.0	81	5.1
XIV	5	10	1	2600	832	240	13.1	200	12.5
XV	2.5	5	0.9	2340	749	401	21.8	378	23.7
XVI	1.5	2.5	0.8	2080	666	303	16.5	283	17.7
XVII	1	1.5	0.7	1820	582	210	11.4	205	12.8
XVIII	0.75	1	0.6	1560	499	136	7.4	135	8.5
XIX	0.5	0.75	0.5	1300	416	146	7.9	144	9.0
XX	0	0.5	0.4	1040	333	106	5.8	106	6.6
					Total	1838	100	1596	100

Note: UISP is the Income Unit of the Public Sector and stands at PEN S/. 2600. PEN stands for Peruvian Nuevo Sol. The last two columns exclude capital districts (which are governed by provincial municipalities) and districts in the Lima/Callao metropolitan area.

Table 2: Average Monthly Salary Income in Peru (2011-2014)

Average Wage Cap		Monthly Salary Income			
Gross					
All Municipalities	2516	Total	1162		
Exclude Capital and Lima/Callao Districts	2140	By Sector		By Education	
After Tax and Deduction		Public	1818	Primary	649
All Municipalities	1761	Private	1438	Secondary	997
Exclude Capital and Lima/Callao Districts	1498	By Occupation		Tertiary (No Univeristy)	1349
		Professionals	2207	Tertiary (University)	2172
		Managers			
		Office Employee	1713		

Note: All amounts are expressed in Peruvian Nuevos Soles (PEN). For the case of the Average Wage Cap, a tax of 17% and a private pension fund deduction of 13% has been applied in order to calculate the after tax and deduction amounts.. The amount for the private sector excludes independent workers.

Table 3: Descriptive Statistics for Main Variables

Variable	N	Mean	S.D.	Min	Max
Wage Cap and Wages					
Mayoral wages (in '000)	1543	2.15	0.75	0.9	8
Wage cap (in '000)	1592	2.14	0.70	1.04	6.5
Municipal Characteristics					
Ln of Area (km2)	1590	5.34	1.38	0.69	10.46
Electoral population (2010)	1592	4,696	9,193	136	105,745
Total Population (2011)	1592	8,361	15,748	182	181,782
Monthly Income (2007)	1592	203.11	83.28	50.11	798.37
Share of population with:					
-Secondary education (2005)	1588	18.22	11.48	0.76	73.65
-No piped water (2007)	1592	56.19	33.06	0	100
-No indoor sewage (2007)	1592	76.61	22.10	0	100
-No electricity(2007)	1592	45.53	25.50	0	100
Politician Selection					
Mayor has tertiary education	1502	0.56	0.50	0	1
Mayor has university degree	1501	0.33	0.47	0	1
Mayor's experience in (years):					
Public management	1500	7.38	5.62	0	42
Private management	1500	3.51	6.90	0	47
Regional projects	1500	0.53	2.20	0	26
Fraction of candidates with:					
-Tertiary education	1592	0.54	0.24	0	1
-University degree	1592	0.29	0.22	0	1
- Public sector experience	1585	0.75	0.22	0	1
- Private sector experience	1585	0.43	0.27	0	1
Bureaucratic Capacity					
Technical needs index	1592	0.47	0.17	0.11	0.96
Core technical needs index	1592	0.57	0.19	0.0	1.0
Management instruments index	1592	0.42	0.13	0.06	0.94
Tenure in office (years):					
- Formulation manager	936	1.71	1.93	0.08	20.42
- Evaluation manager	786	1.84	1.78	0.08	20.42
- Execution manager	1592	1.99	2.02	0.08	21.00
Performance and Political Production					
Public Investment Execution Rate					
- Complete budget	1592	71.49	12.92	14.35	99.75
- Determined resources budget	1592	70.46	13.27	13.55	99.45
% of Incentive Plan goals achieved	1592	71.82	13.35	20	100
Value of Incentive Plan goals achieved	1592	75.63	13.19	20	100
Ln of municipal laws	1592	1.90	0.89	-2.30	5.24
Ln of council agreements	1592	3.29	1.53	-2.30	6.41
Ln of mayoral resolutions	1592	4.90	1.00	-2.30	7.91
Political Landscape					
Party lists (2010)	1592	6.84	2.55	2	20
Winner's vote share (2010)	1558	35.64	10.09	14.56	78.11
Winning margin (2010)	1558	9.34	8.57	0.00	56.22
Electoral Herfindahl-Hirschman Index (2010)	1558	2,607	904	903	6,580
Concentration Index (2010)	1558	61.93	15.12	27.62	100.00
2006 Incumbent behavior (2010):					
- Runs for any mayoral office	1534	0.68	0.47	0	1
- Runs for reelection	1534	0.60	0.49	0	1
- Reelected	1534	0.19	0.39	0	1
Mayor subject to recall voting	1592	0.23	0.42	0	1
Mayor recalled	1592	0.06	0.23	0	1

Note: Data excludes provincial capitals, districts in Lima and Callao and districts created from 2010 onward. Unless otherwise stated, data corresponds to the 2011-2014 electoral period.

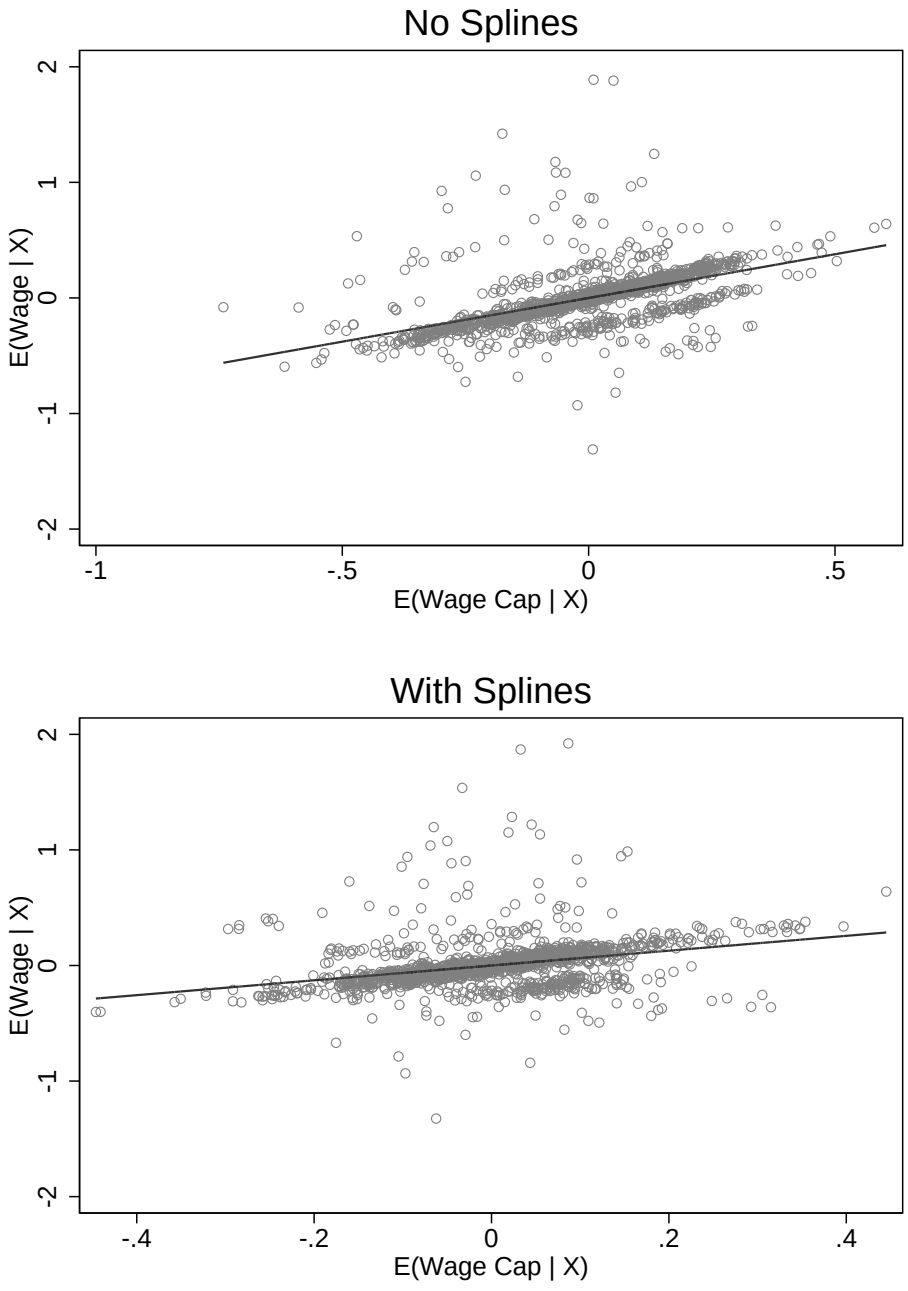
Table 4: Effect of Mayoral Wage Caps on Mayoral Wages

	Mayoral Wage						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage Cap	0.977***	1.008***	0.945***	0.957***	0.644***	0.634***	0.641***
	(0.0143)	(0.0256)	(0.0297)	(0.0291)	(0.0462)	(0.0450)	(0.0421)
Observations	1,542	1,542	1,542	1,542	1,542	1,538	1,534
R-squared	0.916	0.917	0.919	0.919	0.924	0.925	0.926
E.P. Polynomial	None	Linear	Quadratic	Cubic	Cubic	Cubic	Cubic
Splines	No	No	No	No	Yes	Yes	Yes
Controls	No	No	No	No	No	Only Population	Yes
Mean Dependent	2.136	2.136	2.136	2.136	2.136	2.135	2.132
S.D. Dependent	0.723	0.723	0.723	0.723	0.723	0.724	0.721

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: E.P. stands for Electoral Population. Column (5) includes linear splines whose cut-offs coincide with those that delimit wage categories XV and XVI. Column (6) includes the logarithm of the 2007 population count as an additional control. Column (7) includes controls for population and other municipal chracteristics like access to different public services, population with secondary education, household income and district area and number of council members.

Figure 3: Partial Regression Plots for Wage Caps



Sample excludes provincial capitals, districts in the Lima/Callao area and 5 outlier values.

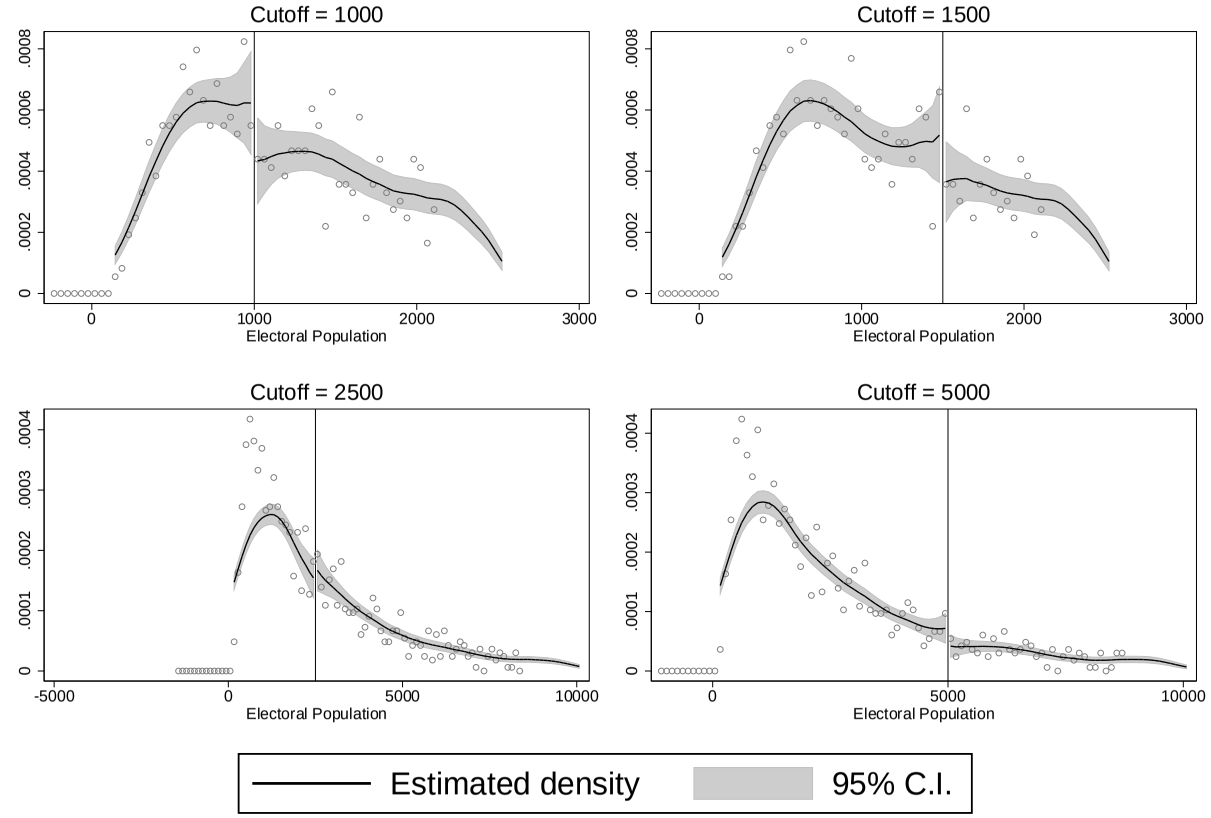
Table 5: Smoothness Regressions on Pre-Reform Outcomes and Covariates

	Coefficient on Wage Cap		Coefficient on Wage Cap
Municipal Accounts:		**% of Population with:**	
Public Investment Exec. Rate	-0.640	Secondary Education	1.475
(2002 -2006)	(2.411)	(2007)	(1.546)
Revenue per Capita	78.34	No Piped Water	1.670
(2002 -2006)	(109.2)	(2007)	(5.250)
Investment per Capita	5.103	No Electricity	-3.610
(2002 -2006)	(46.62)	(2007)	(4.648)
Expenditure per Capita	18.31	**Political Outcomes:**	
(2002 -2006)	(80.09)	Number of Candidates	0.613
		(2002)	(0.482)
Share of Expenditure in:			
Administration	0.483	Winner's Voting Share	-2.141
(2002 -2006)	(2.329)	(2002)	(2.873)
Education	1.774	Mayor Runs for Reelection	0.0805
(2002 -2006)	(2.240)	(2002)	(0.145)
Income per Capita	-0.808	Mayor Recalled	0.0413
(2007)	(10.15)	(1998-2002)	(0.0383)

Standard errors clustered at the regional level in parentheses
$^{***}p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: The period of analysis is indicated below each outcome.

Figure 4: Distribution of Municipal Electoral Population



Note: Category cutoffs are indicated by vertical line.

Table 6: Effect on Selection of Mayor

	Education		Experience (Years)				Experience (Extensive Margin)	
	Tertiary Studies	University Studies	Public Management	Private Management	Avg. Standardized Effect	Regional Projects	Private Management	Regional Projects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mayoral Wages	-1.173**	-0.673	-0.0531	-4.966**	-0.299	-1.572**	-0.644**	-0.644
	(0.501)	(0.487)	(2.365)	(2.150)	(0.272)	(0.703)	(0.275)	(0.485)
Observations	1,447	1,446	1,444	1,444		1,444	1,444	1,444
Model	TS Probit	TS Probit	TSLS	TSLS		TSLS	TS Probit	TS Probit
Local Characteristics	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Mean Dependent	0.565	0.330	7.331	3.544		0.530	0.356	0.110
S.D. Dependent	0.496	0.470	5.453	6.952		2.161	0.479	0.313

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Columns (1) and (2) refer to whether the mayor has completed tertiary and university studies, respectively. Columns (3) and (4) refer to the mayor's years of experience in public and private sector management, as stated in the CENEGREL. The average standardized effect in column (5) considers private and public management experience. Column (6) refers to experience in the development of projects whose impact extends beyond the local government. Columns (7) and (8) refer to whether the mayor has some experience in private management and in the development of regional projects. The estimates in columns (1) and (2) exclude the 34 municipalities where elections were nullified and carried out again in 2011. They also exclude municipalities for which the elected mayor was a local council candidate. These occurs when the winning mayoral candidate is excluded from the party list for various reasons. The estimates in columns (3)-(8) exclude municipalities where the elected mayor was recalled during their term.

Table 7: Effect on the 2010 Local Elections Candidate Pool

	Education			Work Experience		Political
	Tertiary Studies	University Studies	Tertiary (Years)	Public Sector	Private Sector	Party Position
	(1)	(2)	(3)	(4)	(5)	(6)
Mayoral Wages	0.0315	0.0465	-0.0169	-0.0840	0.141	-0.129***
	(0.0715)	(0.0536)	(0.505)	(0.0680)	(0.100)	(0.0490)
Observations	1,534	1,534	1,534	1,527	1,527	1,534
Model	TSLS	TSLS	TSLS	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dependent	0.539	0.287	3.488	0.751	0.431	0.182
S.D. Dependent	0.239	0.223	1.969	0.220	0.267	0.166

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Columns (1) and (2) refer to the fraction of candidates that have completed tertiary and university studies, respectively. Column (3) refers to the average number of years of tertiary education. Estimates in columns (1)-(3) exclude candidates who failed to register at least one entry in their education records. Columns (4) and (5) refer to the fraction of candidates that report at least one public or one private sector job, respectively. Estimates in columns (4) and (5) exclude those candidates who fail to register at least one entry in their work experience records. Column (6) refers to the fraction of candidates that hold or have held at least a working position inside a political party or movement. Data is drawn from the curricula vitae that candidates present to the JNE.

Table 8: Effect on Candidates Ranked 2nd and 3rd and Vote Share of Educated Candidates - 2010 Election

	Fraction of Candidates with:		Vote Share of Candidates with:	
	Tertiary Studies (1)	University Studies (2)	Tertiary Studies (3)	University Studies (4)
Mayoral Wages	-0.0343	-0.159	-17.20**	-9.079
	(0.132)	(0.117)	(8.070)	(7.084)
Observations	1,296	1,296	1,395	1,395
Model	TSLS	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes
Mean Dependent	0.576	0.332	56.57	32.13
S.D. Dependent	0.362	0.347	28.06	26.57

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Columns (1) and (2) refer to the fraction of candidates ranked 2nd and 3rd with tertiary and university studies, respectively. Estimates in columns (1) and (2) exclude municipalities where at least one of the candidates ranked second and third failed to register at least one entry in their education records. They also exclude municipalities where at least one mayoral candidate was excluded and replaced by a local council member candidate. Vote shares in columns (3) and (4) have been adjusted to account for the vote share of candidates who failed to report education records. All estimates exclude municipalities where elections were nullified and carried out again in 2011 and municipalities that had less than four party lists. Data is drawn from the candidates' curricula vitae and results for the 2010 Regional and Local Elections provided by the JNE.

Table 9: Effect on Characteristics of Investment Managers

	Education: Graduate Studies/Specialization Certificates			Tenure: Years in Office		
	Formulation	Evaluation	Execution	Formulation	Evaluation	Execution
	(1)	(2)	(3)	(4)	(5)	(6)
Mayoral Wages	0.136	-0.0174	0.0669	-0.810	-1.099	0.133
	(0.726)	(0.589)	(0.549)	(0.827)	(0.829)	(0.641)
Observations	899	756	1,534	899	756	1,534
Model	TS Probit	TS Probit	TS Probit	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dependent	0.137	0.202	0.140	1.704	1.853	1.969
S.D. Dependent	0.344	0.402	0.347	1.936	1.797	2.028

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Estimates correspond to the characteristics of investment managers of the three investment units that a municipality can have under the national investment system. Columns (1) to (3) refer to whether the investment manager has undertaken graduate studies or studies towards specialization certificates. Examples of Specialization Certificates are public investment courses offered by local public policy schools. Data is drawn from the 2014 CENEGREL and corresponds to those who were investment managers at the time the interviews were carried out.

Table 10: Effect on Municipal Bureaucratic Capacity

	Technical Needs			Public Investment Needs		Management Instruments
	All Tasks	Core Tasks	Public Investment	Assistance	Training	Index
	(1)	(2)	(3)	(4)	(5)	(6)
Mayoral Wages	0.0602	0.0663	0.0931	0.0404	0.146	-0.0130
	(0.0531)	(0.0577)	(0.0736)	(0.101)	(0.106)	(0.0267)
Observations	1,534	1,534	1,534	1,534	1,534	1,534
Model	TSLS	TSLS	TSLS	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dependent	0.473	0.573	0.646	0.650	0.642	0.415
S.D. Dependent	0.167	0.185	0.262	0.319	0.299	0.130

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Results refer to averages for the 2011-2014 period. Column (1) includes all municipal tasks. Column (2) includes main tasks such as strategic planning, budget management, administrative simplification, local development planning and formulation and execution of public investment projects. Column (3) refers to the technical index for the task of formulation and execution of public investment projects. Columns (4) and (5) refer to requests for assistance and training in the latter task. Data is drawn from the RENAMU.

Table 11: Effect on the Public Investment Execution Rates

	Public Investment Execution Rate				
	Total Budget (1)	Only Projects (2)	Determined Resources (3)	Budget by Function: Strategic (4)	Budget by Function: Competitive (5)
Mayoral Wages	-9.013**	-8.435**	-10.20***	-7.927*	-5.722
	(4.027)	(4.087)	(3.791)	(4.196)	(5.184)
Observations	1,534	1,534	1,534	1,534	1,534
Model	TSLS	TSLS	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes
Mean Dependent	71.41	71.42	70.43	70.71	71.53
S.D. Dependent	12.96	13.08	13.27	15.02	16.92

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Column (2) excludes expenditures in activities such as the procurement process for public investment projects. Column (3) only includes investment expenditures financed with determined resources, which include government transfers from mining "canon'. Columns (4) and (5) only include expenditures in tasks that are categorized as strategic or competitive by the MEF. Strategic sectors are agriculture, communications, environment, education, energy, health, public safety, sewage and transport. Competitive tasks include agriculture, communications, energy, sewage, transport and tourism.

Table 12: Effect on Achievement of Municipal Incentives Plan Goals

	% of Goals Achieved (1)	Value of Goals Achieved (2)	Avg. Standardized Effect (3)
Mayoral Wages	-6.226**	-7.646***	-0.457***
	(2.720)	(2.603)	(0.167)
Observations	1,534	1,534	
Model	TSLS	TSLS	
Local Characteristics	Yes	Yes	
Mean Dependent	71.77	75.58	
S.D. Dependent	13.38	13.23	

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Column (1) refers to the percentage of goals achieved in the 2011-2014 period. Column (2) refers to the value of goals achieved. The value is calculating by weighing each goal using the plan weights. These add up to 100. Under the Municipal Incentives Plan, most district municipalities are divided into two groups based on the number of urban households in the district. Controls include dummies for these two groups. Data on goal achievement was provided by MEF.

Table 13: Effect on Production of Political Decrees (2011-2013)

	Ln (Decree)			Average
	Municipal Laws (1)	Mayoral Resolutions (2)	Council Agreements (3)	Standardized Effect (4)
Mayoral Wages	-0.00276	-0.0560	0.368	0.065
	(0.313)	(0.299)	(0.478)	(0.222)
Observations	1,534	1,534	1,534	
Model	TSLS	TSLS	TSLS	
Local Characteristics	Yes	Yes	Yes	
Mean Dependent	1.902	4.897	3.299	
S.D. Dependent	0.886	1.002	1.514	

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: The results refer to average production for the 2011-2013 period. Information for 2014 will be reported in RENAMU 2015, which is unavailable as of this date. Column (4) considers production of all three decrees. Data is drawn from the RENAMU.

Table 14: Effect on FONIPREL Outcomes

	Proposals		Wining Proposals
	Total	Projects	
	(1)	(2)	(3)
Mayoral Wages	-1.816	-0.755	-0.138
	(1.344)	(1.059)	(0.428)
Observations	1,534	1,534	1,534
Model	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes
Mean Dependent	4.801	2.685	0.676
S.D. Dependent	4.245	2.837	1.192

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Columns (1) and (2) refer to the public investment proposals submitted by municipalities to the FONIPREL contestable fund. Column (1) includes pre-investment studies and project proposals. Column (2) excludes pre-investment studies. Column (3) refers to proposals that were declared winners and allocated central government funds. These include both pre-investment studies and public investment projects. Data was provided by MEF.

Table 15: Effect on Corruption Cases Against Mayors

	Extensive Margin		Number of Cases	
	Total	Non-Preliminary	Total	Non-Preliminary
	(1)	(2)	(3)	(4)
Mayoral Wages	-0.363	0.674	0.720	0.405
	(0.547)	(0.685)	(0.660)	(0.341)
Observations	1,444	1,444	1,444	1,444
Model	TS Probit	TS Probit	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes
Mean Dependent	0.324	0.184	0.666	0.278
S.D. Dependent	0.468	0.387	1.409	0.715

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Corruption cases are categorized based on their legal stage. These stages are: preliminary probes, formal inquiry, accusation, trial, appeal, sentencing, execution of sentence. Columns (1) and (3) include all corruption cases while columns (2) and (4) exclude preliminary probes. Columns (1) and (2) refer to whether the mayor has at least one corruption case. Data was provided by the Anti-Corruption Office.

Table 16: Effect on Political Participation

	Parties Running			Participation of Quota Groups	
	Total	Share of Registered	Voter Turnout	Young	Women
	(1)	(2)	(3)	(4)	(5)
Mayoral Wages	2.351**	0.0659**	0.0234*	-0.113***	-0.0462
	(1.045)	(0.0331)	(0.0140)	(0.0393)	(0.0532)
Observations	1,534	1,534	1,534	1,534	1,534
Model	TSLS	TSLS	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes
Mean Dependent	6.849	0.180	0.860	0.0792	0.139
S.D. Dependent	2.532	0.0689	0.0508	0.121	0.158

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Column (1) refers to the total number of parties presenting candidate lists. It includes those whose mayoral candidate was excluded and replaced by the candidate for first council members. Column (2) refers to the number of parties as a fraction of the total number of political movements registered as able to present candidate lists in the municipality. Column (3) refers to those voters who cast a ballot as a fraction of the electoral population. Columns (4) and (5) refers to the fraction of mayoral candidates which belong to specific quota groups. Young candidates are those who are older than 18 but younger than 29. Data was provided by the JNE.

Table 17: Effect on Political Opposition and Fragmentation

	Winner's Support and Turnover			Political Concentration Indicators		
	Winner's Vote Share	Winning Margin	Incumbent Reelected	Effective Parties	HHI	Concentration Index
	(1)	(2)	(3)	(4)	(5)	(6)
Mayoral Wages	-10.95***	-4.224	-0.650	1.731***	-1,041***	-17.69***
	(4.014)	(3.359)	(0.629)	(0.615)	(343.6)	(6.425)
Observations	1,502	1,502	1,502	1,502	1,502	1,502
Model	TSLS	TSLS	TS Probit	TSLS	TSLS	TSLS
Local Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dependent	35.53	9.270	0.186	4.295	2598	61.80
S.D. Dependent	10.03	8.436	0.390	1.407	898.8	15.11

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Column (1) refers to the winner's party vote share as a percentage of all valid votes. Column (2) refers to the difference in vote share between the winner and the second-placed party. Column (3) refers to whether the incumbent mayor was reelected. Column (4) refers to the index of effective parties, which is the inverse of the HHI Index in Column (5). Column (6) refers to the index obtained by adding the vote shares of the top 2 parties. The estimates exclude those municipalities where the 2010 election results were declared null.

Table 18: Effect on the Recall Process

	Recall Kit	Recall Voting			
		Recall	Reason for Voting		Recall
	Bought?	Election	Corruption	Public Works	Successful
	(1)	(2)	(3)	(4)	(5)
Mayoral Wages	0.216	0.0101	0.629	0.635	1.640**
	(0.426)	(0.505)	(0.632)	(0.585)	(0.825)
Observations	1,534	1,534	1,457	1,534	1,534
Model	TS Probit	TS Probit	TS Probit	TS Probit	TS Probit
Local Characteristics	Yes	Yes	Yes	Yes	Yes
Mean Dependent	0.624	0.237	0.0803	0.0867	0.0587
S.D. Dependent	0.485	0.426	0.272	0.281	0.235

Standard errors clustered at the regional level in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Column (1) refers to whether a recall kit was bought to initiate a recall process in the municipality. Estimates in Columns (2) to (5) correspond to recall elections carried out in 2012 and 2013 (Recalls are not possible in the first and last year of a mayor's term). Column (2) refers to whether the recall petition was accepted and a recall election took place. Columns (3) and (4) refer to the stated reason for the recall as indicated by the promoter in the recall petition. Column (5) refers to whether the mayor was actually recalled. Estimates in column (3) exclude a fraction of the sample due to colinearity issues.

Figure 5: Effect of Mayor Having Tertiary Education on Investment Execution Rate

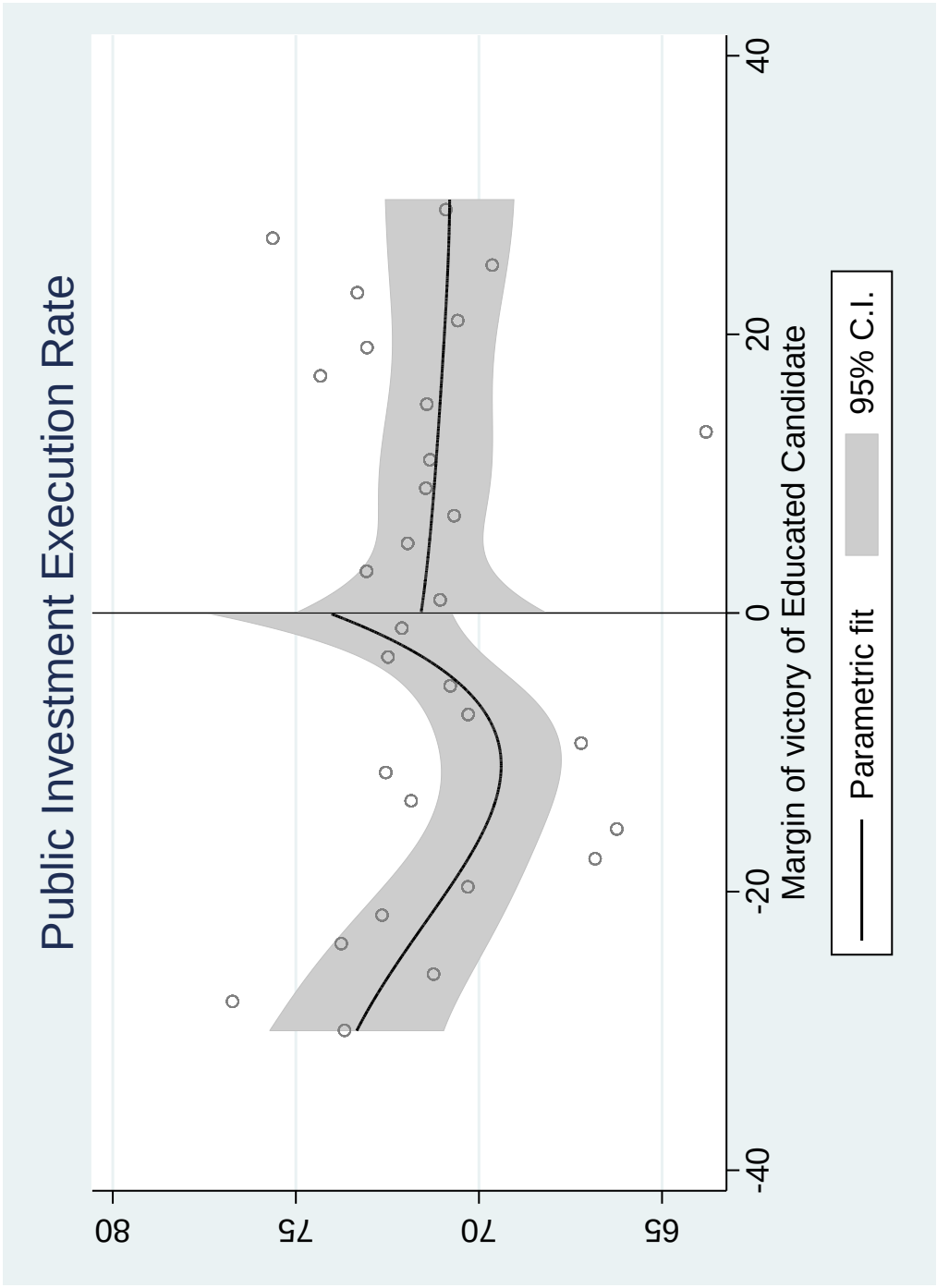


Table 19: Determinants of Public Investment Execution Rate

	(1)	(2)	(3)	(4)	(5)
	Public Investment Execution Rate				
Winner's Voting Share	0.113**	0.0988**	0.0895*	0.0939*	0.0922*
	(0.0480)	(0.0472)	(0.0486)	(0.0471)	(0.0462)
Incumbent Mayor		1.837**	1.984**	1.950**	1.180
		(0.876)	(0.870)	(0.899)	(0.984)
Mayor Recalled			-3.952***	-4.054***	-2.948**
			(1.147)	(1.186)	(1.219)
Mayor Has Tertiary Studies				0.811	0.738
				(0.941)	(0.939)
Public Management Experience					0.137*
					(0.0784)
Private Management Experience					0.0738
					(0.0506)
Invesment Manager Experience					0.299*
					(0.146)
Observations	1,550	1,528	1,528	1,474	1,474
Controls	Yes	Yes	Yes	Yes	Yes
S.E.	Clustered	Clustered	Clustered	Clustered	Clustered
Mean	71.51	71.58	71.58	71.45	71.45
SD	13	13.01	13.01	13.09	13.09

Robust standard errors in parentheses
***$p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: The dependent variable is the 2011-2014 execution rate of the total public investment budget. "Incumbent Mayor" is a dummy for whether the mayor elected in the 2010 election is the incumbent. "Mayor Recalled" is a dummy for whether the mayor was recalled either in 2012 or 2013. "Public Management Experience" and "Private Management Experience" refer to the mayor's experience and are expressed in years. "Investment Manager Experience" refers to the experience of the investment execution unit manager and is expressed in years. "University degree" is a dummy for whether the mayor has a university degree. Controls are the same as the ones used in the baseline specification, except for the inclusion of public investment budget size instead of past transfers.

Table 20: Robustness of Main Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Electoral Population Controls			Restricted Sample	Budget Controls		Different Instrument
	Baseline	Log of Electoral Pop.	Quadratic Splines	No Splines	+/- 25% from Cutoff	Log of Investment	Quadratic Canon	2006 and 2010 Wage Cap
Politician Selection								
Mayor Has Tertiary Education	-1.173**	-0.938*	-0.857*	-0.812*	-1.245**	-1.207**	-1.217**	-1.205***
	(0.501)	(0.562)	(0.470)	(0.435)	(0.589)	(0.488)	(0.491)	(0.450)
Mayor's Public Management Exp.	-0.0531	-1.124	-1.094	0.470	-2.421	0.0373	0.0198	0.574
	(2.365)	(1.875)	(2.084)	(1.918)	(2.715)	(2.355)	(2.368)	(2.401)
Mayor's Private Management Exp.	-4.966**	-6.397***	-2.915	-4.888**	-6.060**	-4.733**	-4.899**	-3.712
	(2.150)	(2.466)	(2.211)	(2.138)	(2.790)	(2.207)	(2.218)	(2.300)
Fraction of Candidates with:								
Tertiary Education	0.0315	0.0583	0.0660	0.00255	0.0568	0.0266	0.0290	0.0392
	(0.0715)	(0.107)	(0.0735)	(0.0734)	(0.0751)	(0.0735)	(0.0728)	(0.0766)
Public Experience	-0.0840	-0.0727	-0.0740	-0.0418	-0.0881	-0.0886	-0.0871	-0.0741
	(0.0680)	(0.0887)	(0.0553)	(0.0662)	(0.0769)	(0.0676)	(0.0676)	(0.0688)
Private Experience	0.141	0.136	0.152	0.0913	0.203*	0.141	0.142	0.0794
	(0.100)	(0.104)	(0.0933)	(0.0806)	(0.115)	(0.101)	(0.102)	(0.0980)
Municipal Bureaucratic Capacity								
Technical Needs (All Tasks)	0.0602	0.127*	0.108*	0.117***	0.0860	0.0634	0.0616	0.0527
	(0.0531)	(0.0654)	(0.0552)	(0.0444)	(0.0614)	(0.0531)	(0.0532)	(0.0558)
Technical Needs (Core Tasks)	0.0663	0.127*	0.106	0.133***	0.0930	0.0689	0.0677	0.0655
	(0.0577)	(0.0683)	(0.0674)	(0.0502)	(0.0639)	(0.0576)	(0.0578)	(0.0563)
Technical Needs (Public Investment)	0.0931	0.172**	0.145	0.161**	0.124	0.0987	0.0924	0.0673
	(0.0736)	(0.0802)	(0.0968)	(0.0641)	(0.0876)	(0.0735)	(0.0748)	(0.0689)
Government Performance								
Public Investment Exec. Rate	-9.013**	-6.488*	-7.988**	-8.597***	-10.96**	-8.061**	-8.997**	-8.531***
	(4.027)	(3.482)	(3.439)	(3.255)	(4.676)	(3.732)	(3.950)	(3.154)
Public Investment Exec. Rate	-10.20***	-7.741**	-10.50***	-9.649***	-12.81***	-9.438**	-10.25***	-10.68***
(Determined Resources)	(3.791)	(3.667)	(3.634)	(2.812)	(4.742)	(3.765)	(3.551)	(3.429)
% of Goals Achieved	-6.226**	-5.626*	-1.468	-5.148*	-7.216**	-6.293**	-6.139**	-7.981***
	(2.720)	(3.418)	(2.375)	(2.722)	(3.582)	(2.635)	(2.750)	(2.540)
Value of Goals Achieved	-7.646***	-8.197**	-2.652	-6.500**	-9.626**	-7.698***	-7.562***	-9.275***
	(2.603)	(3.190)	(2.451)	(2.692)	(3.972)	(2.563)	(2.616)	(2.491)
Political Landscape								
Number of Party Lists	2.351**	2.011*	2.515**	2.566***	1.512	2.326**	2.347**	1.752*
	(1.045)	(1.128)	(0.996)	(0.782)	(1.067)	(1.034)	(1.040)	(0.933)
Winner's Vote Share	-10.95***	-7.987**	-11.22***	-8.612***	-10.42**	-11.22***	-10.99***	-10.20***
	(4.014)	(3.897)	(3.750)	(2.639)	(4.892)	(3.970)	(3.980)	(3.384)
Winning Margin	-4.224	-1.978	-5.520*	-2.682	-5.710	-4.260	-4.184	-3.484
	(3.359)	(3.342)	(3.047)	(2.407)	(4.021)	(3.292)	(3.348)	(2.611)
Number of Effective Parties	1.731***	1.602***	1.675***	1.708***	1.366*	1.774***	1.740***	1.518***
	(0.615)	(0.574)	(0.641)	(0.466)	(0.706)	(0.611)	(0.610)	(0.540)
HHI	-1,041***	-760.8**	-1,030***	-843.3***	-911.1**	-1,069***	-1,048***	-962.7***
	(343.6)	(366.4)	(334.4)	(258.9)	(401.8)	(341.8)	(340.9)	(299.4)

Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: All columns include controls for municipal characteristics. Column (2) replaces the cubic polynomial of the electoral population for the natural logarithm of the variable. Column (4) includes a more flexible specification for total population. Column (5) restricts the sample to those municipalities whose distance from the cutoff is less than 25% of the corresponding population range. Column (6) replaces the control for past transfers for the log of the public investment budget. Column (7) replaces the control for past transfers for a 2nd order polynomial of current "canon" transfers. Column (8) uses both the 2006 and 2010 wage caps as instruments.